

# MARINE REVIEW.

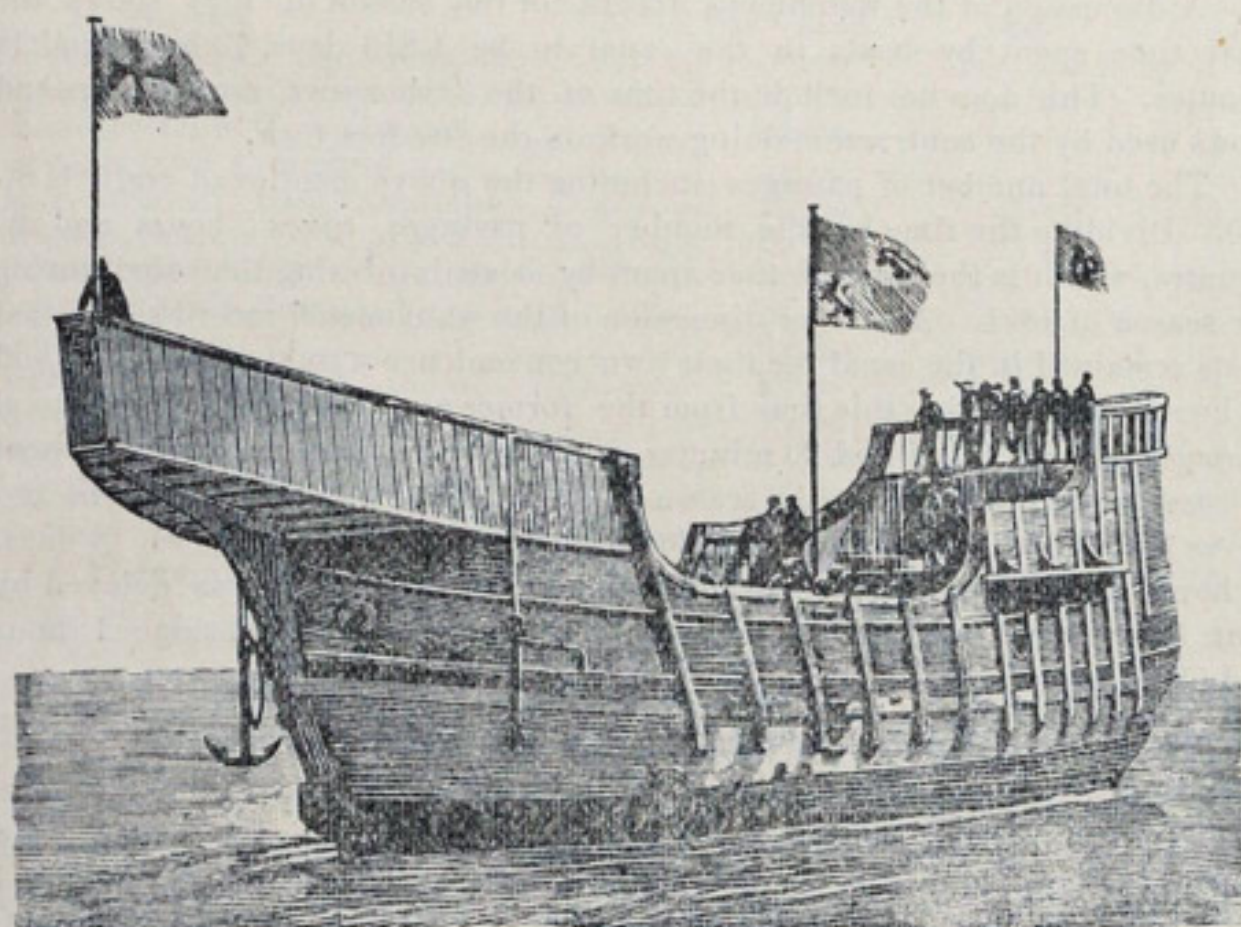
VOL. VI.

CLEVELAND, OHIO, THURSDAY, AUGUST 18, 1892.

No. 7.

## Reconstructed Fleet of Columbus.

The engraving accompanying this article shows the reconstructed Santa Maria, the flag ship of the fleet of Columbus. The engraving, which was made from a photograph taken immediately after the vessel was launched at the arsenal of Carraca, is reproduced from one of the illustrated Spanish journals. The model of the vessel was constructed in sixty-three days under the direction of the Spanish Naval Architect Senor Leopold



RECONSTRUCTED SANTA MARIA.

Puente Y. Wilke. The caravel was constructed at the expense of the Spanish government, while the two other vessels, the Pinta and the Nina, are being built in Spain at the cost of the United States under the direction of Lieut. Little, an American naval officer. The Santa Maria was a prominent feature of the celebrations of Aug. 3 at the port of Palos in commemoration of the 400th anniversary of the departure of Columbus in search of the new world.

The Santa Maria is less than 100 feet in length and her tonnage is about 130. At the present time she has been completely finished and equipped, including a reproduction of an entirely insignificant armament of seven falconets and a few smaller pieces of ordnance. The launch at Carraca was made the occasion of a solemn ceremony and the caravel glided into the water carrying the great flag of Castille, the royal standard of Spain and the insignia of Christopher Columbus. This reconstructed vessel is to cross the Atlantic with her two consorts, with a suitable convoy, and to take part in the great naval review to be held in New York bay. After this celebration the vessels will be taken to Lake Michigan where they will form next summer one of the features of interest at the World's Columbian Exposition.

## Removal of Lights and Buoys.

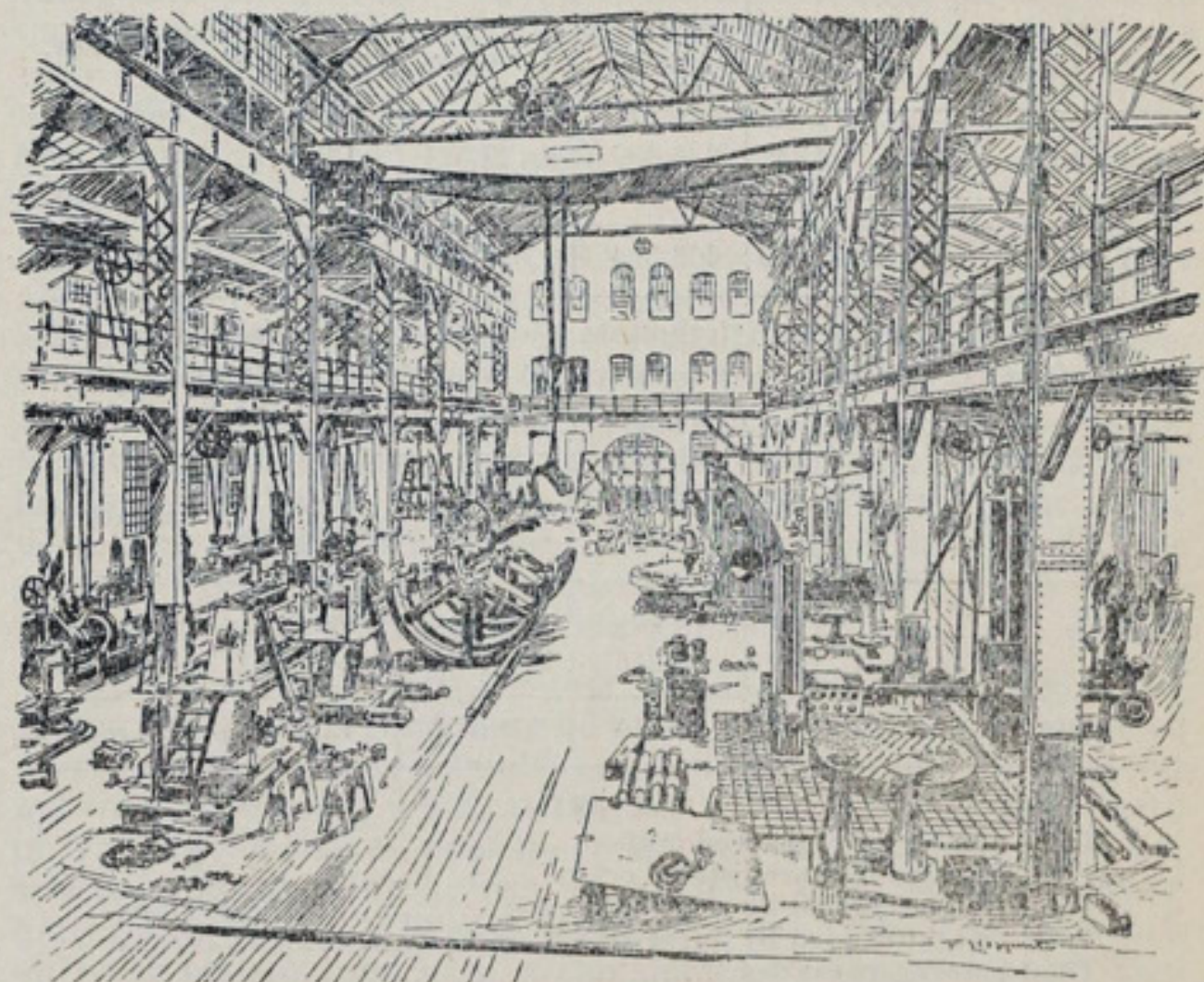
The light-house board has just issued the annual publication containing a list of lights and fog signals of the United States and Canada on the northern lakes and rivers, corrected to the opening of navigation, 1892. A copy of the book will be sent free of charge to any shipmaster on application to the light-house board, Washington, D. C., or to the offices of the light-house inspectors at Chicago, Buffalo or Detroit.

As a result of a question raised last fall regarding the time of extinguishing lights and removing buoys, the board makes the following statement: "All lights of the United States on the northern and northwestern lakes and their adjacent naviga-

ble waters will be exhibited from sunset to sunrise, at all seasons when vessels can enter the ports, or are navigating in their vicinity. The dates of discontinuing and relighting the lights will vary with the seasons, but keepers will be careful to exhibit lights whenever of use to navigators. All buoys in the lakes and their adjacent waters will be kept in their respective stations as long as possible in the fall without running the risk of loss by being caught in the ice; and they will be promptly replaced in the spring after the ice leaves."

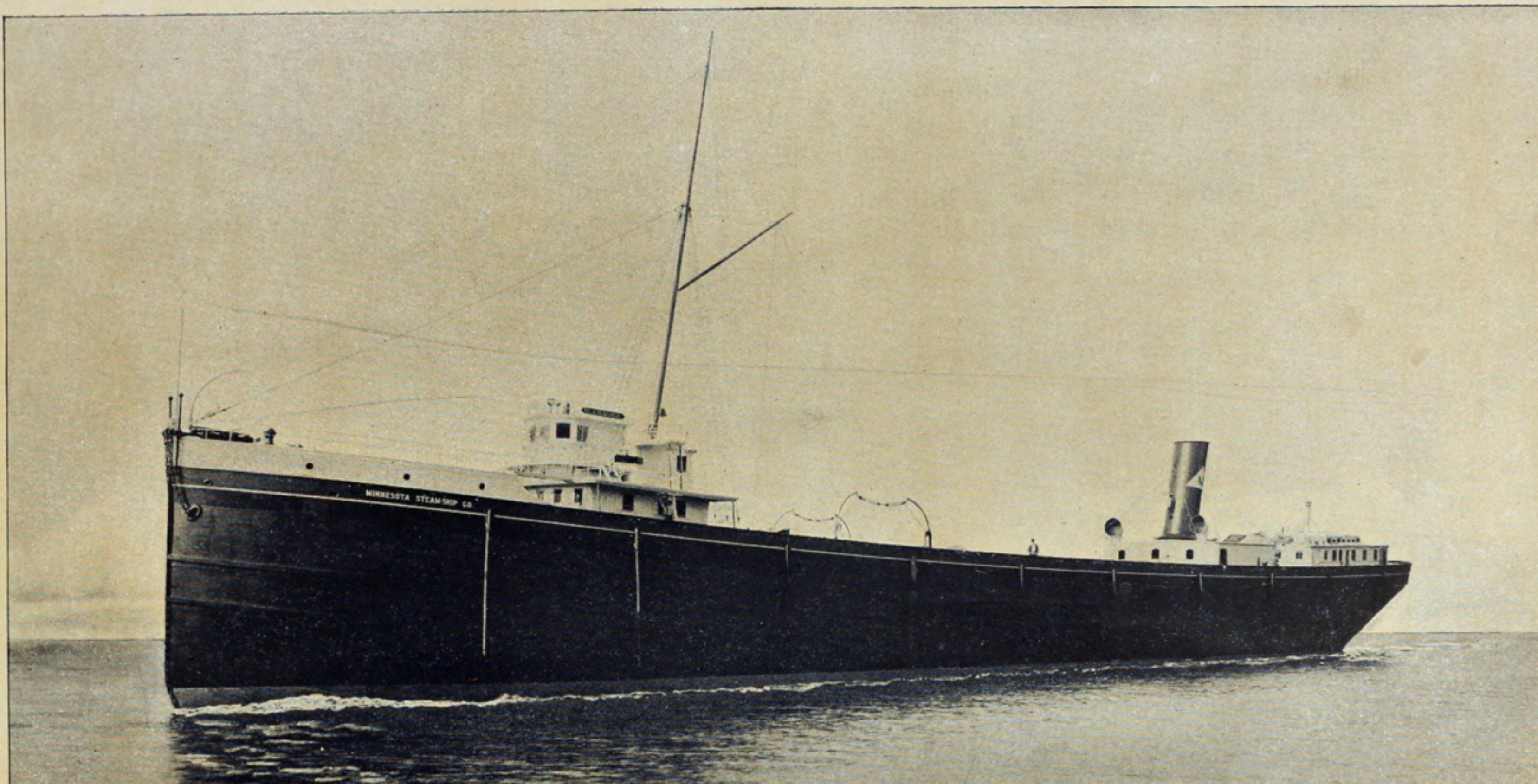
## Lake Erie Engineering Works.

The illustration below shows the interior of the new Lake Erie Engineering Works, Buffalo, N. Y., erected at a cost of \$350,000 under the direction of Richard Hammond. The works have a frontage of 425 feet on Chicago street and 309 feet on Perry street, and include a machine shop 370 by 108 feet; a foundry 300 by 108, blacksmith shop 100 by 60, and a main building three stories high, and 250 by 45 in dimensions, which includes the offices, draughting rooms, pattern shops and store rooms. The buildings are of red brick, iron, slate and glass. The machine shop is equipped with some of the largest and latest improved machine tools in this country. There is a planer weighing over 152 tons, to plane a casting 20 feet wide, 12 feet high and 30 feet long; running four cutting tools at once, each of which will take a cut three inches wide and one quarter of an inch deep. There is also a large boring and turning mill capable of boring and turning a fly-wheel or pulley 30 feet in diameter by 8 feet face. This mill has six cutting tools, two on the cross rail and four special ones on the main bed, all feeding automatically. Each of these tools is capable of taking a cut two and one-half inches wide and one-quarter of an inch deep. The mill weighs 135 tons and is the largest tool of the kind ever made. There is a ten foot boring and turning mill specially designed for the company, and also a horizontal boring, drilling and milling machine that will bore, drill or mill the face of a casting—at one setting—18 feet long, 12 feet high and 8 feet thick. The tool weighs ninety tons. Besides these specially designed machines there is a 72-inch



INTERIOR LAKE ERIE ENGINEERING WORKS, BUFFALO, N. Y.

lathe, which will turn a shaft 36 inches in diameter and 35 feet long, reducing the diameter to 30 inches at one cut; and a 54-inch lathe capable of carrying a shaft 20 feet in length and reducing a diameter of 42 inches to 36 inches at one cut. The heavy work is carried to these enormous tools by an overhead electric traveling crane capable of lifting thirty-five tons. The machine shop is as light as day, and at night is illuminated by 300 incandescent and sixteen arc lights.



*Built by the GLOBE IRON WORKS COMPANY.*

*Supplement to MARINE REVIEW, Cleveland, O.*

ONE OF THE MINNESOTA FLEET.

### Less Than a Mill and a Half Per Mile-Ton.

Gen. O. M. Poe, in charge of the St. Mary's Falls canal, recently submitted to the war department a report known as the "mile-tons" report, discussing the canal traffic during the season of 1891. A similar report is prepared each winter by the canal officers, who collect a great deal of data from the vessel owners. The statistics are especially interesting as they cover the cost of carrying freight on the lakes. We are indebted to Gen. Casey, chief of engineers, war department, for the report, which is here printed in full:

#### COST OF CARRYING FREIGHT.

| ITEMS.                         | Unit.     | Quantity.  | Price per Unit. | Amount.        |
|--------------------------------|-----------|------------|-----------------|----------------|
| Coal.....                      | Net tons. | 2,507,532  | .43             | \$1,078,238 76 |
| Flour.....                     | Barrels.  | 3,780,143  | .15             | 567,021 45     |
| Wheat.....                     | Bushels.  | 38,816,570 | .04             | 1,785,562 22   |
| Grain, other than wheat.....   | Bushels.  | 1,032,104  | .03             | 36,123 64      |
| Manufactured iron.....         | Net tons. | 42,560     | 2.50            | 106,400 00     |
| Pig iron.....                  | Net tons. | 27,181     | 1.17            | 31,801 77      |
| Salt.....                      | Barrels.  | 234,528    | .18             | 42,215 04      |
| Copper.....                    | Net tons. | 69,190     | 2.00            | 138,380 00     |
| Iron ore.....                  | Net tons. | 3,560,213  | .98             | 3,489,008 74   |
| Lumber.....                    | M feet.   | 366,305    | 2.70            | 989,023 50     |
| Silver ore and Bullion.....    | Net tons. | 1,731      | 2.25            | 3,894 75       |
| Building stone.....            | Net tons. | 44,080     | 2.00            | 88,160 00      |
| Miscellaneous merchandise..... | Net tons. | 417,093    | 3.58            | 1,493,192 94   |
|                                |           |            |                 | \$9,949,022 81 |

The total amount of freight paid, \$9,849,022.81, divided by the total mile-tons, 7,292,462,269, gives the cost per mile-ton as 1.35 mills. The average distance freight was carried was 820 4-10 miles, which was 23 2-10 miles greater than in 1890.

The nature of the data from which the preceding result is found is such that it includes the cost of loading and unloading. The results obtained were as follows:

|                                           |                |
|-------------------------------------------|----------------|
| Total mile-tons.....                      | 7,292,462,269  |
| Total freight paid.....                   | \$9,849,022.81 |
| Cost per mile-ton.....                    | 1 35-100 mills |
| Average distance freight was carried..... | 820 4-10 miles |

The total number of registered craft which used the canal during the season was:

|                   |     |
|-------------------|-----|
| Steamers.....     | 396 |
| Sail vessels..... | 256 |
| Total.....        | 652 |

#### AMERICAN CRAFT.

| Class.        | No. | Registered tonnage. | Freight Tonnage. | No. of passengers. | Valuation.   |
|---------------|-----|---------------------|------------------|--------------------|--------------|
| Steamers..... | 358 | 325,697             | 6,129,521        | 13,817             | \$26,879,100 |
| Sails.....    | 237 | 142,667             | 2,396,557        |                    | 5,068,200    |
| Totals.....   | 595 | 468,364             | 8,526,078        | 13,817             | \$31,947,300 |

NOTE.—11,729 net tons of freight were also carried by American unregistered craft in 447 passages, the average cargo being 26 107-2000 tons.

#### CANADIAN CRAFT.

| Class.        | No. | Registered tonnage. | Freight Tonnage. | No. of passengers. | Valuation.  |
|---------------|-----|---------------------|------------------|--------------------|-------------|
| Steamers..... | 38  | 18,489              | 291,418          | 12,373             | \$1,771,500 |
| Sails.....    | 19  | 8,255               | 59,534           |                    | 348,000     |
| Totals.....   | 57  | 26,744              | 350,952          | 12,373             | \$2,119,500 |

#### SUMMARY.

|                                                  |                |
|--------------------------------------------------|----------------|
| Total number of registered craft.....            | 652            |
| Total passages by unregistered craft.....        | 447            |
| Total freight carried by registered craft.....   | 8,877,030 tons |
| Total freight carried by unregistered craft..... | 11,729 tons    |
| Total passengers carried.....                    | 26,190         |
| Valuation of craft (registered).....             | \$34,066,800   |

The total passages for the season amounted to 10,191; 1,696 of these were by sixty-seven craft of under 100 tons register. Their aggregate registered tonnage was 1,960 tons, their average tonnage 29 17-67 tons. The freight carried by these craft only amounted to 1,724 tons.

From the column of "largest cargoes" it is ascertained that there were 101 steamers that carried in their greatest loads 2,000 tons and upwards; that these 101 cargoes aggregated 227,236 tons, and averaged 2,249 tons. There

NOTE.—Tons in all cases mean net tons, or tons of 2,000 pounds.

were eighteen steamers that carried 2,500 tons and upwards, aggregating 47,200 tons and averaging 2,622 tons. Two sail vessels carried 2,000 tons and upwards, aggregating 52,084 tons and averaging 2,367 tons. Eight sail vessels carried 2,500 tons and upwards, aggregating 21,539 tons and averaging 2,692 tons.

The greatest number of miles run during the season was 43,107 by the American propeller Mariska of the Minnesota Steamship line, Cleveland. The greatest amount of freight carried during the season is to the credit of the propeller Castalia, owned by Harvey H. Brown of Cleveland. This steamer carried 68,943 tons.

The greatest number of mile-tons for the season is to the credit of the propeller Northern Queen of Buffalo, the Northern Steamship Company's line, and is 60,899,000. This boat also earned the same credit last season, having carried 68,794,994. The largest single cargo carried by any vessel is to the credit of the American propeller E. C. Pope, and amounted to 3,136 tons. The Pope is owned by Eddy Bros. of Saginaw, Mich.

The largest single cargo carried by a sail vessel is to the credit of the American Steel Barge Company's tow barge 111, and amounted to 2,950 tons.

A discussion of the watchmens' record for the season of 1891 shows the total time spent by boats in the canal to be 1,816 days, 13 hours and 19 minutes. This does not include the time of the harbor tugs nor the tugs and scows used by the contractors doing work on the 800-foot lock.

The total number of passages (including the above mentioned craft) is 8,650. Dividing the time by the number of passages, gives 5 hours and 25 minutes, which is the average time spent by boats in passing the canal during the season of 1891. A further discussion of the watchmens' record shows that boats remained in the canal for their own convenience a total of 614 days and 19 hours. Subtracting this time from the former and dividing by the total passages, gives 3 hours and 20 minutes as the average time necessarily spent in passing the canal during the season of 1891. The watchmens' record also shows that the railroad bridge was closed during the season of 1891 14 days, 15 hours and 45 minutes; during the same period the bridge was delayed by boats 5 hours and 54 minutes, and boats were delayed by the bridge 1 hour and 58 minutes.

### Report on Welland Canal traffic.

Special Correspondence to the MARINE REVIEW.

KINGSTON, ONT., August 18.—A report of canal statistics has just been issued at Ottawa, and from it much matter of interest concerning the Welland canal, about which there is so much discussion at present, has been obtained. Last season the quantity of grain which passed through that canal for Montreal was 295,509, against 185,034 in 1887, and 180,694 in 1882. The total quantity of freight moved on the Welland during 1891 was 975,013 tons, of which 945,239 tons was through freight and 29,774 tons local. The largest movement is toward the seaboard. In 1891, 684,801 tons of freight passed eastward and 290,212 westward. The report shows how largely the Welland is used by United States vessels. During the eleven years from 1881 to 1891, the quantity of grain passing through the Welland from United States ports to United States ports has grown from 96,266 tons eastward and 97,907 westward to 306,257 tons eastward and 247,543 westward. In the matter of grain alone the American shipments through the Welland have grown thus: 1882, 63,881 tons; 1885, 117,346 tons; 1888, 169,664 tons; 1891, 202,710 tons. All the foregoing had to pay full tolls because it was forwarded by the United States route to the seaboard. The quantity of grain and peas which went down the St. Lawrence to Montreal in 1890 was 242,571 tons, and in 1891, 320,434 tons, an increase of 77,863 tons. The Grand Trunk and Canadian Pacific Railway carried 119,208 and 184,410 tons of the same freight, which made a total increase over 1890 by the Canadian route of 143,065 tons.

Mr. Reid, the engineer who brought the new steel steamer here from New York for the mail line, has had to leave the boat because he did not possess a Canadian certificate. In all probability he will remain here and procure a Canadian certificate so that he may resume his duties on the Columbian next summer. The electrician, Mr. Madison, who came from New York, had to leave the steamer also.

During last week over 700,000 bushels of grain reached here from the west. Many of the vessels were American bottoms and would have gone on to Ogdensburg but for the rebate. Kingston and the forwarders therefore received the benefit.

The amended steamboat inspection act, passed last session, respecting the use of boats, life preservers and other life saving apparatus, carried by steamers or other vessels mentioned in the act, went into force on the 13th inst.

### Trade Notes.

Most of the machinery for the Lake Erie Engineering Works, illustrated in this issue, was furnished by the Niles Tool Works, Hamilton, O.

Henry R. Worthington of New York has recently shipped to the Butte and Boston Company, of Butte, Mon., a compound condensing station pump, the water end of which is composed entirely of composition metal, this being necessary on account of the chemical conditions of the water handled. The pump has a capacity of 200 gallons per minute pumped 1,000 feet.

## Record of Speed and Big Cargoes.

[Masters or owners are invited to report improvements on this list.]

Iron ore: Lake Michigan—Maryland, Inter-Ocean Transportation Company of Milwaukee, 3,663 gross, or 4,103 net tons, Escanaba to South Chicago, draft 17 feet 4 inches; Western Reserve, Peter Minch of Cleveland, 3,314 gross, or 3,717 net tons, Escanaba to Ashtabula.

Grain: E. C. Pope, Eddy Bros. of Bay City, 125,730 bushels of corn, Chicago to Buffalo, draft 14 feet 8 inches; Western Reserve, Peter Minch of Cleveland, 112,431 bushels of wheat, Chicago to Buffalo; W. H. Gilcher, J. C. Gilchrist of Cleveland, 114,982 bushels of corn, Chicago to Buffalo.

Speed: Owego, Union Line of Buffalo, Buffalo to Chicago, 889 miles, 54 hours and 16 minutes, 16.4 miles an hour; Saranac, Lehigh Valley Line of Buffalo, Buffalo to Lime-Kilns, 240 miles, 15 hours and 10 minutes, 16 miles an hour.

## Iron Mining.

## VALUE OF LEADING STOCKS.

Quoted by Chas. H. Potter & Co., No. 104 Superior St. Cleveland, O.

| Stocks.                                 | Par Value. | Bid.    | Asked.   |
|-----------------------------------------|------------|---------|----------|
| Cleveland-Cliffs Iron Company.....      | \$100 00   | \$..... | \$ 70 00 |
| Champion Iron Company.....              | 25 00      | .....   | .....    |
| Chandler Iron Company.....              | 25 00      | 43 00   | 45 00    |
| Jackson Iron Company.....               | 25 00      | .....   | 100 00   |
| Lake Superior Iron Company.....         | 25 00      | 43 00   | 45 00    |
| Minnesota Iron Company.....             | 100 00     | 73 50   | 77 00    |
| Pittsburgh & Lake Angeline Iron Co..... | 25 00      | .....   | 140 00   |
| Republic Iron Company.....              | 25 00      | .....   | 15 00    |
| Ashland.....                            | 25 00      | .....   | .....    |
| Section Thirty-three.....               | 25 00      | .....   | 7 50     |
| Brotherton.....                         | 25 00      | 2 00    | 2 50     |
| Iron Belt.....                          | 25 00      | 2 25    | 2 50     |
| Aurora.....                             | 25 00      | 8 25    | .....    |

There is absolutely nothing doing in the way of transfers of Lake Superior mining stocks. Trade in these securities has never been known to be so dull in Cleveland. In previous years the market in Cleveland for stocks in the old line of producing mines had its seasons of dullness and activity according to conditions ruling in the iron trade, but there was at all times transactions enough to maintain considerable interest in the business. Since January last, however, shares have ruled so low that owners of stock, excepting the cases of a few large companies, have been forced to hold the securities and await the possible development of a market for them through improvement in the iron market that has been a long time coming. Owners of stock in the Cleveland-Cliffs company, which is of course looked to as one of the leading concerns, have good reasons now for expecting on Oct. 1 a beginning of dividends on the 6 per cent. annual basis decided upon when the consolidation was effected, but outside of this there is nothing new in profit sharing.

Shipments of iron ore from Two Harbors up to and including Wednesday, Aug. 3, aggregated 618,650 gross tons, of which 355,261 tons were from the Chandler, 261,124 tons from the Minnesota and 2,265 tons from the Pioneer mine. On the same date shipments from Ashland aggregated 1,230,523 gross tons, divided among the different mines as follows: Ashland 102,855 tons, Aurora 178,014, Colby No. 2 32,795, Rand, 10,988, Tilden 142,831, Taylor 11,749, Globe-Ashland 3,872, Iron Belt 82,024, Montreal, north vein 20,448, Palms 34,655, Section 33, south vein 2,362, Section 33, north vein 3,133, Anvil 1,696, Brotherton 59,440, Bourne 10,574, Comet 18,067, Carey 15,144, East Norrie 121,835, Eureka 3,175, Newport 56,066, Norrie 240,624, Pabst 25,005, Odanah 1,286, Sunday Lake 36,762, Windsor 13,240, Imperial 2,446.

It is estimated that the Pioneer furnace at Negaunee, which was blown out permanently a short time ago, had made 1,000,000 tons of pig iron, which had brought at least \$25,000,000. It had been in operation forty years. During its existence its product had been sold from \$65 a ton all the way down to \$15, which is about the present price. In its best days its average consumption of charcoal was the product of two acres of forest a day. From forty to fifty men were employed at the furnace, and quite a number of those who quit with the final blowing out had been steadily employed there from fifteen to twenty-five years.

The Itasca Iron Company, a Mesaba range concern, with offices in Chicago, St. Paul, Duluth and New York, was incor-

porated under the laws of Illinois recently. The capital is \$5,000,000 and the incorporators and projectors are Leroy D. Thomas, Walter S. Holden and Thomas Degraff of Chicago, Ex-Governor Campbell and A. W. Thurman of Ohio, R. S. Dean and William Allen of New York, Frank Barrett, of St. Paul and James H. Baker of Garden City.

Loading of ore at the stock piles of the Champion mine, which was shut down two weeks ago, was begun on Thursday last. Miners who were laid off at this mine have found work on the Mesaba and Vermillion ranges and in the coal mines of Illinois.

The Zenith mine, Vermillion range, has begun shipments on a contract for 20,000 tons of ore, 10,000 tons of which is said to already in the dump ready to be moved to Two Harbors. Runyon, Mack & Co. of Cleveland are the sales agents.

## In General.

The annual meeting of the National Board of Steam Navigation will be held in New York Sept. 13.

A note in the Marine Journal of New York says that the commerce destroyer Columbia, the war ship launched in Philadelphia recently, is the fifth vessel of the United States navy to bear that name, and three of these met with disastrous fates.

A recent English invention of great importance to navigators is a hermetically sealed chronometer to prevent the detrimental effects of the atmosphere and moisture on the mechanism. The invention consists in hermetically closing the casing of the chronometer, doing away with the keyhole through which the air and the moisture gained access to the works, and affecting the winding up of the chronometer by providing a flexible or elastic diaphragm.

Marblehead is the name given to United States cruiser No. 12, launched from the ship yard of Harrison, Loring & Co., South Boston, on Thursday last. The boat is 257 feet long, 37 feet beam and 19 feet hold. She is a twin-screw protected cruiser and will have two triple-expansion engines of the vertical inverted type, aggregating about 10,800 horse power. The cylinders of the engines are 20½, 39 and 63 inches diameter and 33 inches stroke of piston.

British shipowners are helping a school of cooking for ship's cooks in Glasgow, and now the Liverpool Training School of Cookery aided by the Liverpool Shipowners' Association has opened rooms for classes for ship's cooks. British shipowners recognize that a cook is as important a personage on board ship as the master. If a cook is competent in his business, then not only is there saving in the provision bill, but having had their stomachs properly attended to, the crew are more like men satisfied with the world and ready to do their duty.—Maritime Register.

The particulars of the Shenandoah-Tam O'Shanter race around the horn to San Francisco, now being widely published, are quite interesting. The Shenandoah is an American clipper of 3,258 tons and the Tam O'Shanter a ship of 1,602 tons. Both left New York for San Francisco on the same day, and after being at sea for 115 days arrived at the latter port within three hours of each other, the Tam O'Shanter winning the race. The vessels carried all their canvas during the entire voyage, the winds being light. After rounding the horn both vessels were a week in company, and sailed side by side.

A new Clyde paddle steamer, the Isle of Arran, has a life-saving deck, so constructed and fitted as to be speedily launched overboard in event of casualty, in sections of a highly buoyant nature. The deck, which is patented, is certified by the board of trade to float 1,120 persons in safety. It is in forty sections, and measures over all 47 feet by 24 feet, each section having buoyant capacity for twenty-eight persons. The sections weigh only 156 pounds, and can be transferred to the water by two men. The are fitted with short rescue ropes, floated by wooden handles, for passengers to grasp. When in their place the sections form a complete deck, made perfectly watertight at the junctions by means of long, powerful square-threaded screws. When not in specific use as a life-saving apparatus the whole is used as a shelter deck against rain and excessive sunshine.

Send 50 cents in stamps to the MARINE REVIEW for ten phototypes and gravures of lake steamers neatly bound.

## CHICAGO LAKE INTERESTS.

WESTERN OFFICE, MARINE REVIEW,  
No. 13 Western Union Building, CHICAGO, ILL., Aug. 18.

For four years vessel owners up this way have been bears on new boats. As they have read of the new contracts which have been so plentiful they have been both weary and disgusted. There is not a vesselman in Chicago so far as has been heard from who does not believe that there are already too many boats for the trade. On the other hand Detroit, Bay City and Cleveland vessel owners believe that there will be business for the fleet, however fast they may be built, and that the American marine is growing much faster than the commerce of the great lakes. Old-timers say that it has been the same way for many years, and that it is because Cleveland, Detroit and Bay City have always been enthusiastic on lake business that these cities today have fifty rich men who gained their wealth from boat owning to one in Chicago and Milwaukee. It may be that the bears are as far off in their judgment today as they were ten years ago. To the superficial observer who knows how hard a time vesselmen have had in maintaining even low grain rates this season, with with an unprecedented movement in iron ore to assist them, it would seem that the marine was growing much faster than lake commerce. However, it is everybody to their own liking, particularly when it is at their own expense.

A great many questions are asked nowadays about what the World's Fair Steamship Company intends to do next season. So far as can be learned no definite plans have yet been made. The company intends having the Palmer, Livingstone and the whaleback now building at West Superior. Further than this nothing seems to have been done. Work is progressing on the piers at both the lake front and Jackson park, and both will doubtless be in shape by next spring.

The war of the Society for the Prevention of Smoke against the river tugs will begin in earnest before the week is over by suits against every tug in the river for being a nuisance in smoking too much. The situation seems to be this: If the tugs burn soft coal they must smoke. If they burn hard coal, towing charges must be raised 10 to 15 per cent. The society, which is raising so much dust, has pretended to furnish a smoke consumer for soft coal, but tug men say it is not practicable. As the society has paid \$100 for the damage done the boiler of a tug while the alleged smoke consumer was being tested, this would seem to settle the matter of smoke consumers. The society holds as one of its fundamental principles that if smoke can not be prevented with soft coal it will give up the effort. But when it comes to tugs it is bent on driving the boats to the use of hard coal at any cost. As the society and the newspapers are in league, and the newspapers run the justices and many of the judges, the tugmen are the under dogs in the fight by a large majority. The only outcome now in sight is for the tugs to burn hard coal or for the society to back down. The chances are in favor of hard coal. Surely the tugs can not afford to pay a fine every day of \$50 and costs, and make much money for their owners. They may not make much money by burning hard coal, but that will be much better than being eaten up by fines.

## Grain at Chicago and Duluth.

Stocks of grain at Chicago and Duluth on Monday, the 15th inst. were:

|                                   | Chicago.   |           | Duluth.        |
|-----------------------------------|------------|-----------|----------------|
|                                   | Wheat, bu. | Corn, bu. | All wheat, bu. |
| In store.....                     | 5,119,994  | 3,730,252 | 2,006,240      |
| Decrease last week.....           |            | 79,098    | 842,885        |
| Increase last week.....           | 732,429    |           |                |
| Increase over same time last year | 3,069,029  | 2,395,116 | 1,733,030      |

In addition to the above there is in store in Chicago 1,339,662 bushels of oats, 150,143 bushels of rye and 24,034 bushels of barley.

## Official Numbers and Tonnage.

The bureau of navigation, E. C. O'Brien commissioner, assigned official numbers to the following lake vessels and also passed upon their tonnage measurements during the week ending August 13: Steam—Seattle, built at Oscoda, Mich., and hailing from Port Huron, Mich., 429.13 tons gross, 330.96 net, No. 116,524; Sparta, built at Sparta, Mich., and hailing from Grand Haven, Mich., 23.88 tons gross, 14.43 net, No. 116,525.

## Washington News Matters.

Special Correspondence to the MARINE REVIEW.

WASHINGTON, D. C., Aug. 18.—Ex-Congressman R. C. Parsons of Cleveland was among the representatives of lake shipping interests who were called to Washington last week to consult with Secretary of State Foster, relative to the course to be pursued if it should at any time become necessary to put into force retaliatory tolls in the canals of the United States on the lakes, on account of an unjust tolls system in Canada. Mr. Parsons represented the Lake Carriers' Association and was recognized as a leader in the delegation.

The battle-ship provided by the last naval appropriation bill is now being planned at the navy department. This ship will resemble the New York but will possess points of improvement over that vessel, being 1,000 tons larger. Her increased size will reduce her speed as compared with the New York, al-

though her engines will possess 16,000 horse power. She will have a greater steaming radius, however, as much of her extra size will be devoted to carrying additional coal, and her boilers will be larger and more economical in the use of fuel. She is to have the largest boilers yet put into a ship in this country—16 feet 6 inches in diameter. She will probably carry but four 8-inch guns instead of six and will be given a larger number of smaller guns, so as to make her more effective against unarmed vessels.

## Lake Freight Matters.

For three weeks past iron ore producers in the Lake Superior region have been threatening a reduction in the ore movement, on account of the production being greater than that of any previous year, without anything in the conditions surrounding the iron trade to warrant shipments of unsold ore. The first move toward this promised restriction in shipments is now being felt in a reduction in lake freights. The non-Bessemer mines shipping from Escanaba have suspended operations altogether in a few cases, and it is claimed that on the whole Escanaba shipments to Lake Erie will show a decline of about 50 per cent. during the coming month. It can not be said that very much unsold ore has been brought down, but the moderate rates of freight that have ruled since the opening have caused shippers to cover sales more fully than in any previous season. Vessel owners are of the opinion that the present decline, which has been assisted largely by the suspension of coal shipments, on account of labor troubles at Buffalo and crowded docks at the head of Lake Superior, will be only temporary, but is admitted on all hands nevertheless that these conditions only add to the feeling of uncertainty regarding fall freights. Duluth grain dealers, who expect to have a large crop to move after receipts of new wheat about September 10, have asked for bids on contracts covering the transportation of large quantities of the grain, but they are making no offers themselves. There is no doubt that under present conditions offers similar to those of last fall—4 cents a bushel—would be readily taken, notwithstanding the loss sustained by owners who made such contracts a year ago. Chicago has 4,454,116 bushels more of corn and wheat in store than at this time a year ago, but the poor condition of the corn and high prices in the selling markets have been against a movement of the grain. At this writing ore freights are: Ashland and Two Harbors to Ohio ports, \$1.10; same ports to South Chicago, \$1.05; Marquette to Ohio ports, \$1; Escanaba to Ohio ports, 75 cents.

## Contracts for More Vessels.

Within the past week, Cleveland builders have completed arrangements preparatory to putting down two more keels for steel freight boats, and negotiations are pending in all of the ship yards around the lakes for additional work. No settlement has, however, been reached as yet regarding the passenger boats for the Hill line, and the talk of the other new line boats, notably two for the Union line, is equally uncertain. The Union Dry Dock Company of Buffalo made plans some time ago for two steamboats for the Union Steamboat Company but there is nothing definite regarding their construction. The Cleveland boats will both be big steel steamers. One of them, to be built by the Globe company on their own account, will be a duplicate of the two new Minnesota steamers going into commission this week. The other boat will be built by the Cleveland Ship Building Company for Mr. M. A. Bradley and others. This steamer will be 324 feet keel, 42 feet beam and 24½ feet depth of hold, with a 54-inch water bottom. The engines will be triple expansion, with cylinders 24, 31 and 61 inches in diameter and 42 inches stroke of piston. The boilers will be 14 feet in diameter and 13 feet long and the wheel 13 feet 6 inches in diameter. The arrangement of cabins will be similar to that of steamer Wawatam.

Saugatuck parties have purchased the steamer I. M. Weston from the Sandusky Steamboat and Fishing Company of Sandusky.

### The Minnesota Steamers.

An engraving of one of the boats in the Minnesota Steamship Company's fleet is presented with this issue of the REVIEW. Within the coming week two steamers of increased dimensions will be added to this line, and the Globe Iron Works Company of Cleveland is about to put down on its own account another duplicate of the big boats. As steamers of this kind are operated at an actual expense of about \$225 a day, some data regarding the work of the boats already in commission will prove interesting.

The dimensions of the hulls of the first six steamers of the fleet are 292½ feet keel, 308 feet over all, 40 feet beam and 24½ feet deep. The engines are 1,300 nominal horse power and the cylinders are 24, 38 and 61 by 42 inches, steam being furnished by two 14 by 12½ feet boilers. The hulls of the two new boats are 330 feet keel, 350 feet over all, 45 feet beam and 24½ feet deep. The engines for the new boats are 24, 39 and 63 by 48 inches, the nominal horse power being 1,800. The boiler power in the new boats has been increased to three 12 by 12 feet boilers. In addition to the duplex ballast pump, there is a centrifugal pump on the new steamers for pumping out the water compartments.

Last season the average time per trip, Lake Superior and return, for all boats in this line was 8 days. In 1890 the average was 7 days and 18 hours. This average includes all time of loading and unloading, as well as delays in port. The difference in favor of 1890 will be readily understood when it is known that for about a full month last season several of the boats were engaged in the Duluth-Buffalo grain trade, where so much delay resulted from the Buffalo blockade. Running regularly in the iron ore trade between Two Harbors and Lake Erie, the boats make seven-day trips, and in one month last season three of the fleet made trips in six days. The round-trip distance between Cleveland and Two Harbors is 1644 miles and between Ashtabula and Two Harbors 1726 miles.

In 1891 the season of navigation was almost a full month short of the ordinary season, so that the work of these boats in 1890 will be of more service in giving an idea of what may be expected of a modern steel steamer on the lakes. The Manola, having the best record that season, made thirty trips, all but one of which was between Two Harbors and Lake Erie ports. The exception was a trip to Escanaba. This boat carried during the season 71,170 gross tons of freight, running back light on all trips, and her average cargo was 2,295 tons on an average draft of 14 feet 7 inches forward and 14 feet 9 inches aft. The distance traveled was 50,584 miles, and the average time of trip 7 days 9½ hours. The total amount of fuel burned, soft coal, was 5,528 net tons, an average of 184 tons per trip or 218 pounds per mile.

The steam steerers, windlasses and capstans on the two new boats, as well as the last two of the original six, were built by the Globe Iron Works Company.

### Big Loads.

Another of the big steel boats, the steamer W. H. Gilcher, has just brought down a record breaking cargo from Lake Superior. The Gilcher's latest cargo is 2,560 gross or 2,880 net tons of iron ore. This is very probably the largest cargo taken through the canal this season, although the steamer E. C. Pope last season carried 3,136 net tons on a slightly increased draft.

Among other large loads is a cargo of 160,000 bushels of oats taken out of Chicago early in the week by the steamer Brazil and 105,000 bushels of wheat carried by the new steamer W. H. Gilbert. It is figured that five bushels of wheat will furnish food for one person for a year. At this rate the Gilbert's cargo would feed an army of 21,000 for that period.

The U. S. S. Marblehead described on another page of this issue, is fitted throughout with Blake pumps for fire, bilge and feeding boilers. For the latter purpose the Blake company have a special vertical duplex pump of admiralty pattern.



C. R. Jones & Co., succeed Jones & Drake in the vessel brokerage business in Cleveland.

A new schedule of wages will probably be arranged by the Lake Carriers' Association during the coming week.

On a draft of 14 feet 6 inches the whaleback barge No. 118 last week took a cargo of 2,833 net tons of coal from Lorain to Superior.

Messrs. Sloan, Cowles & Sloan of Buffalo will build another excursion steamer during the winter to cost about \$30,000. She will have three decks for passengers.

J. S. Sullivan and S. C. Schenck of Toledo have sold the tug Doan to the Toledo, Ann Arbor & North Michigan Railway for \$3,000. She goes to Frankfort, Mich.

The Canadian Pacific passenger steamer Manitoba and the large steel freighter E. C. Pope had a race from Detour to Sault Ste Marie. The Manitoba was beaten five miles.

Business on the Owen Sound-Port Arthur route has slackened so much that one of the Canadian Pacific steamers, the Alberta, has been placed in ordinary at Owen Sound.

James Watts, formerly master of the light-house tender Warrington, has taken command of the City of London. Capt. Madden of the London will go into the City of Genoa.

The steel steamers Mariposa, Maritana and Schuylkill, all ready to go into commission within the coming week, are fitted with electric light plants furnished by the Fisher Electric Company of Detroit.

There was shipped from Cheboygan in July 17,352,000 feet of pine and 1,075,000 feet of hardwood lumber, 1,450,000 lath, 2,858,000 shingles and 18,000 cubic feet of timber. Alpena has shipped this season 87,820,000 feet of lumber.

A Toledo dispatch again revives the story that treasure hunters, this time from Chicago, will try to locate the schooner Favorite, which foundered in Lake Erie off Monroe, Mich., about thirty-five years ago. The Favorite had a cargo of whiskey and wine, and it is thought that if the casks containing the liquor have remained in good condition the cargo will be very valuable.

Capt. L. R. Boynton has bought the passenger steamer Riverside from the Clark estate of Detroit and will run her between Mackinaw City, St. Ignace and Mackinac island, under a contract with railroads converging at the straits. The Riverside is now in service on the Detroit river but will be replaced by the Wyandotte, a new boat just launched by the Detroit Dry Dock Company.

The Sheriffs Manufacturing Company, Milwaukee, Wis., has taken a contract for engines for a steamer 85 feet long, 22 feet beam and 5 feet hold, building at New Orleans for the McEwan and Murray Lumber Company, to be used for towing logs on Lake Pontchartrain. The Sheriffs company also has an engine contract for a launch building at Minneapolis. This work will take the place of a compound engine for the A. E. Shores, just completed. It is 16 and 43 by 36 inches, fore and aft compound. The wheel from the same company is 9 feet 8 inches by 13 feet 6 inches. The boiler was built by the Manitowoc Steam Boiler Works.

Capt. George P. McKay, accompanied by Capt. Charles G. Penney, U. S. A., will leave Cleveland Friday for Duluth on the steamer Northern King, with the intention of visiting different places along the shore of Lake Superior down to the Sault and Mackinaw on the return to Cleveland. Capt. McKay will make an extended inquiry regarding aids to navigation on Lake Superior, and his trip will undoubtedly be a very pleasant one. Although Capt. McKay spent his boyhood on Lake Superior, his father having taken up a home at the Sault in 1845, he has not visited that country within the past ten years. He began sailing when there was not a single light on Lake Superior, and will undoubtedly meet many of the old pioneers whose reminiscences will be very interesting.

# MARINE REVIEW.

DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

JOHN M. MULROONEY, . . . . . } PROPRIETORS.  
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The books of the United States treasury department contain the names of 3,600 vessels, measuring 1,154,870.38 tons in the lake trade. In classification of this fleet the lakes have more steamboats of 1,000 to 2,500 tons than the combined ownership of this class of vessels in all other sections of the country. The number of vessels of 1,000 to 2,500 tons on the lakes on June 30, 1891, was 310 and their aggregate gross tonnage 512,787.58; in all other parts of the country the number of this class of vessels was, on the same date, 213 and their gross tonnage 319,750.84. The classification of the entire lake fleet is as follows:

| Class.               | Number. | Tonnage.     |
|----------------------|---------|--------------|
| Steam vessels .....  | 1,592   | 756,751.53   |
| Sailing vessels..... | 1,243   | 325,131.06   |
| Canal boats.....     | 703     | 72,515.42    |
| Barges.....          | 62      | 20,472.37    |
| Total.....           | 3,600   | 1,154,870.38 |

Tonnage built on the lakes during the past five years, according to the reports of the United States commissioner of navigation, is as follows:

|            | No. of boats. | Net Tonnage. |
|------------|---------------|--------------|
| 1887.....  | 152           | 56,488.32    |
| 1888.....  | 222           | 101,102.87   |
| 1889.....  | 225           | 107,080.30   |
| 1890.....  | 218           | 108,515.00   |
| 1891.....  | 204           | 111,856.45   |
| Total..... | 1,021         | 485,042.94   |

St. Mary's Falls and Suez canal traffic: Number of boats through St. Mary's Falls canal in 1890, 228 days of navigation, 10,557; tonnage, net registered, 8,454,435. Number of boats through Suez canal during 1890, full year, 3,389; tonnage, net registered, 6,890,014. Number of boats through St. Mary's Falls canal in 1891, 225 days of navigation, 10,191; tonnage, net registered, 8,400,685. Number of boats through Suez canal during 1891, full year, 4,207; tonnage, net registered, 8,698,777.

Entered at Cleveland Post Office as Second-class Mail Matter.

It is NOT probable that President Harrison or the state department will be prompted by any influence from lake shipping interests in considering the latest action of the Canadian cabinet with reference to the canal tolls question. At a special meeting of the cabinet in Montreal Saturday it was decided not to interfere with the rebates at present, but the existing system of rebates will be terminated at the end of the present season, and an assurance to that effect will at once be given to the United States government. A proposition will also be submitted to the United States government that a conference shall be held between representatives of the two governments at Washington during the coming winter to discuss the whole question of railway and inland navigation. The dominion cabinet refers to large contracts made by Canadian dealers in grain, as an excuse for immediate action in abolishing the rebates. No protest to the acceptance of this proposition by the Washington government may be excepted from United States shipping interests on the lakes, but sufficient time not having elapsed for consideration of the Canadian offer by the state department, any definite opinion from these interests as yet would, of course, be considered premature. If the matter is allowed to go over to the coming winter, it would seem that the United States government should use its influence when the whole question of inland navigation comes up to secure for Canadian commerce full and equal rights with American commerce in the New York state canals. Canada finds little use for the New York canals but on the claim that Canadian vessels have been deprived of equal rights in these canals, and on this claim alone, has the dominion government found any excuse for its present policy regarding tolls in the Welland and along the St. Lawrence.

THE St. Mary's river has been partially lighted and boats loaded to the limit of water in its deepest cuts have begun to run the treacherous channels by night. A feeling of unsafety in some cases and prejudice in others will cause delay in a general use of the lights by all vessels but it will come before another season has passed, and in the meantime the members of the light-house board will find that they have undertaken the greatest lighting project ever attempted in this country. The work should be handled with care and its detail should be looked after by the district officers who have gained a knowledge of the river through several years of experience with its navigation.

EVERYBODY interested in lake shipping knows that there is no truth in the charge that politics has had to do with the action of the present administration relative to the Canadian canal tolls. It has again been proven, however, that Canada can not enter on a war of commercial non-intercourse with the United States, and would not if she could. The authorities on both sides have shown the best of judgment in handling this question, and if the latest proposition from the dominion government, to discuss the whole subject of inland commerce next winter, is accepted the results may extend further than the mere settlement of canal tolls.

A DISCUSSION of St. Mary's Falls canal traffic during 1891, printed elsewhere in this issue, shows that on a total of nearly 9,000,000 tons of freight passing through the canal during the year the average cost per mile-ton was 1.35 mills. The total amount of freight charges paid was \$9,849,022.81 and the total mile-tons was 9,292,462,269. The report made public for the first time in this issue of the REVIEW, is one of the most interesting statements as yet sent out regarding the canal traffic. The detail regarding work of certain large steel steamers in the Lake Superior trade is also very interesting.

ON WEDNESDAY, the 10th inst., eighty-eight vessels were locked through the St. Mary's Falls canal. With the water at 14 feet 9 inches and steamers running the river by night, the canal may be expected to make a wonderful showing in freight traffic during August. It might be well to note also that these new conditions will have an effect on freight rates.

## Notice to Mariners.

Capt. Andrew Hackett, keeper of Bois Blanc island light, has located another Detroit river obstruction. A tow going up the river a few days ago was just above the Bar point light-ship when a stop was made to shorten up the tow line. In starting up again the tow line brought to the surface a large wooden stock anchor, but it fell to the bottom again before it could be secured. It is about 800 feet to the northward of the Bar point light-ship and about half way between the red stake at that point and the course followed on the Amherstburg ranges.

In its monthly bulletin, date of August 1, covering changes in aids to navigation during the month of July, the light-house board calls attention to the temporary disablement of the fog signal at Outer island light station and to the establishment of a fog signal (a bell) at Sherwood point, south side entrance from Green bay into Sturgeon bay. This bulletin, which is now issued monthly from the Washington office of the board, and can be had on application to the Washington office or to the district officers on the lakes, also contains this month full information regarding the shoal at Wangoshance, Lake Michigan, recently located by Commander Ludlow. The exact position of the buoy locating this shoal is as follows: Wangoshance light station, S. E. by S.,  $1\frac{1}{2}$  miles; St. Helena light station, E. N. E.  $\frac{1}{2}$  E.,  $12\frac{1}{8}$  miles; White shoal light vessel, N. W. by N.,  $2\frac{5}{8}$  miles; Grays' reef light vessel, W. S. W.  $\frac{3}{8}$  W., 4 miles.

The board has also issued a circular giving location and other information relative to the thirty-eight lights in the St. Mary's river, with the aid of which some vessel masters have run the river by night. As there is little doubt, however, of a number of changes being made in the present system of lights on the river, the notice from the board may be considered only temporary.

### System in the Management of Lake Freight Steamers.

Probably nowhere in this country is there more system attending the management of floating property than among the iron ore and railway companies owning large steel steamers on the lakes. This work has been planned mainly within the past few years, since practical men from both deck and engine departments have been taken ashore and placed in charge of the different fleets. Owners have learned that economy in the management of everything pertaining to costly modern boats can be best secured through detailed reports of operating expenses, and these reports, now made through managers and chief engineers have reached a high degree of perfection. With the chief engineer it has been proven that the saving in fuel and oil alone, resulting from his care, amounts to more than his salary. When one steamer in a fleet uses more coal, or makes less speed than another, her engines are indicated, the trouble located and a correction made. If there was no chief engineer, no one would know whether the boat was being run as economically as it might be, or whether it was doing even as well as a duplicate steamer. The chief also looks after necessary repairs in the winter. All the large Buffalo lines have their chief engineers, and companies that are acquiring new steamers are rapidly coming to see the wisdom of it.

Data required for information necessary to the work of the chief engineer is obtained by requiring the engineer of each steamer to keep a trip log sheet. On one Cleveland line this sheet is arranged for a round trip, and is sent to the office of the company on arrival of the steamer at the lower lake port. Beginning at the left the headings of the blank are: Date, time, passing ports and light-houses and time of checking and starting at full speed, reading of revolution register, revolutions per minute, steam, vacuum, miles from last port passed, miles per hour and indicated horse power. Below this are spaces for total time at full speed and for total time under check, and for fuel purchased and fuel left over. In addition to this are lines where amounts of different kinds of oils used are noted. There is also space for noting repairs and cost of same. Ports of passage given for an Escanaba trip in the ore trade are, usually, Point au Pelee, Colchester, Bar point, Detroit, St. Clair canal, Ft. Gratiot, Sand Beach, Point aux Barques, Thunder Bay island, Presque isle, Cheboygan, Mackinac, Waugoshance and Poverty island. The uniformity in the number of revolutions made during trips by different steamers is surprising. The average number is about 200,000 each way, and here are a few passages where the variance does not amount to a 1,000 revolutions; 200,500, 201,000, 200,300, 199,800, 200,890.

In this line the reports from engineers are summarized each month in a comparative statement of engineers' operating expenses. On one blank is included the names of all the vessels in the fleet, and there are spaces for the number of trips, hours and miles run, miles per hour, fuel used, number of tons with average of tons per trip, pounds per hour, pounds per mile, lubricants used and engineer's repairs. The spaces provide for an average of lubricants used per trip and per mile.

The dimensions of the steamers in this line are 312 feet 6 inches over all, 296 feet 5½ inches keel, 40 feet beam and 24 feet 6 inches deep. The engines are triple expansion, 24, 38 and 61 inches by 42 inches stroke, and the two boilers are 14 by 12½ feet. On account of shallow connecting waters between the lakes, the draft of these boats is limited to about 16 feet. Including checking down in the rivers, these boats have run all this season, light and loaded, at an average speed of 12¾ miles an hour. The cargoes on draft mentioned average from 2,700 to 3,000 tons. Running at the speed mentioned and carrying these cargoes, the coal consumption for these boats averages from 213 to 224 pounds per mile. This coal is slack and not bituminous of a low grade costing about \$2.35 per ton, and in comparing the efficiency of lake steamers with seagoing steamers this should be considered. The cost of lubricants per mile for these steamers averages from .008 to .012 cents, and repairs, packing, rags and soap costs from \$2.70 to \$4.00 per trip. After giving fair consideration to the above statement, it is believed

that for efficiency and economy lake cargo carrying steamers are the best in the world.

In the offices of another large steamship company a balance sheet is kept, receipts and disbursements being entered under amount and per ton freight carried, the receipts consisting of freights and towing, while the disbursements are included in fuel, oils, repairs, provisions, cargo handling, chandlery, labor, outfit, insurance, engineers' supplies and electric lighting. Deductions are made from this, showing gross earnings, operating expenses and net earnings per day, average cost per man, total miles traveled, tons freight carried, tons fuel used, and other information that particularizes the work of operating boats in a systematic way, hardly surpassed in any other business.

An engineer employed in a fleet that is looked after in this manner stands on his merits. The intelligent, progressive man who operates his machinery with the least expense, is placed upon a better footing than the man whose work shows negligence of any kind. There is no excuse for the complaints that another master or engineer will get just as much credit, whether his work is efficient or not. This system of noting operating expenses is at all times an assurance to the steamboat officer that his work is at least known to managers and owners, whether it is appreciated or not.

Talking over one of the summarized reports, a chief engineer said that as a class he noticed that the young, educated man runs an engine more economically than the man of experience who has not the education. This brings to mind an incident. Ten years ago there was a young engineer on a line of boats owned in Chicago. He made a study of his work, and soon decided he ought to have an indicator in order to continue. In those days an owner would have thought it as reasonable to buy a piano for the engine room as to buy an indicator. So the young engineer bought one himself. He spoke of his purchase to another engineer who had a better berth, and had more experience. The older engineer was so unkind as to inform his ambitious companion that he was a fool to spend his money for anything that would benefit the owner. The young man acknowledged that he would get no immediate benefit from indicating the engine on his boat, but said he was satisfied with his investment. This season the young man who bought the indicator is chief engineer of as large a fleet of steamers as there is on the lakes, and the other man was around during the past spring complaining that as a result of persecution by master or owner he didn't have anything to do.

### Fifty Knots an Hour.

*By Jules Verne, the Second.*

I am an engineer, and an adept at forced draught,  
And my system when applied to any blooming craft  
Can not fail to gain a knot, and in many cases "two,"  
Independent of the builders, the stokers, or the crew.

My system is not new, nor is it very old,  
'Tis the difference, "do you see," 'twixt heated air and cold;  
When properly constructed, and applied with proper care,  
There is none other like it, I solemnly declare.

But like all great inventors, 'tis hard to hold my own,  
Some people will assert that my system was well known  
Before the Christian era, but it could not be the same,  
Because my system is unique and always bears my name.

When builders wish their ships to steam at fifty knots an hour,  
And find with all their genius they cannot raise the power  
Without the well-known system which owes its birth to me,  
They will hesitate no longer to pay the patent fee.

Now with my well-known system, no watch the stokers keep,  
But, like good honest Christians, turn in and soundly sleep;  
The galley fire is all I need to generate the steam,  
To drive the ocean greyhounds across the ocean stream.

Now all ye budding editors attention pay to me,  
When you hear of famous steamers speeding o'er the deep blue sea  
Remember to give credit, where credit it is due,  
And that is to my system—not the builders or the crew.

Fairplay, London.

SEND 50 CENTS IN STAMPS TO THE MARINE REVIEW FOR  
TEN PHOTOTYPES AND GRAVURES OF LAKE STEAMERS NEATLY  
BOUND.

### Work of the Ship Yards.

Detroit fire commissioners opened bids Monday for a fire boat. Tenders ranged from \$30,000 to \$49,000 with the Craig Ship Building Company the lowest bidder. The contract for the fire pumps was awarded to Thomas Manning Jr. & Co., Cleveland. There will be two sets of double pumps, having water cylinders 16 inches and steam cylinders 10 inches, the stroke being 11 inches.

The treasury department will shortly send to lake ship builders plans for a small steel steamer to be used by the collector of customs at Chicago for boarding incoming vessels. The vessel will cost about \$40,000 and will be fast. The last congress appropriated \$28,000 for the boat, but it was found that a craft of the kind required could not be built for that amount and \$12,000 additional was appropriated by the present congress.

Wheeler & Co. of West Bay City are preparing to put \$100,000 into improvements in their present small engine building plant, and expect to build the greater part, if not all, of the machinery for the big steamer to be built for the Hawgood and Avery Transit Company. It is evident that this company, alike to other big ship building concerns, recognizes the importance of turning attention entirely to the building of iron ships with a big plant. Its yard facilities will permit of eight vessels of 300 feet being put down at one time.

A Chicago report credits the steamer Codorus, first of the three new Anchor line boats to go into commission, with having taken a cargo of 2,965 net tons on an average draft of 16 feet. This is the boat built by the Union Dry Dock Company of Buffalo. Another of these steamers, the Schuylkill, built by the Globe Iron Works Company of Cleveland, was given a trial trip Monday. The trial was in every way satisfactory. The Mahoning, the third boat, built by the Detroit Dry Dock Company, is also about ready for service. There is little doubt that these steamers will carry larger loads than any of the lake line boats.

The Detroit Free Press says of the new Graham & Morton line screw steamer Chicora, which left the Orlean street yard of the Detroit Dry Dock Company last week for Chicago: "It can truthfully be said that a more beautifully finished boat has never left a shipyard, and the traveling community between Chicago and St. Joseph are to be congratulated upon having

such a superb floating palace to carry them across the lake. She has fifty-four staterooms, exclusive of those for the officers. Two of them amidships—one of them on each side—are double rooms, finished in Pullman style, and are models of elegance and convenience. The clerk's and steward's apartments on the main deck, together with the smoking room on the upper deck forward, are finished in quartered oak. The grand saloon, dining saloon and all state rooms are of mahogany. The staircase is a work of art. The boat has as yet had no trial of speed, but no fears are felt in that respect. Her machinery appeared to work perfectly, and during her short run the engine was turned very rapidly."

**U. S. ENGINEER OFFICE, 34 WEST CONGRESS ST., Detroit Mich., August 17, 1892.** Sealed proposals for: 1, dredging Black River, at Port Huron, Michigan; 2, dredging mouth of Black River, Port Huron, Michigan, will be received at this office until 2 p. m. September 16, 1892, and then publicly opened. Specifications, blank forms and all available information will be furnished on application to this office. O. M. POE, Colonel, Corps of Engineers, etc. Sept. 8.

**U. S. ENGINEER OFFICE, DETROIT, MICH., August 16, 1892.** Sealed proposals for: 1, dredging bar at mouth of Saginaw River, Mich.; 2, dredging Essexville bar near mouth of Saginaw River; 3, dredging west channel along West Bay City, Mich.; 4, dredging channel of Saginaw River above Bay City, Mich., will be received at this office until 2 p. m., September 15, 1892, and then publicly opened. Specifications, blank forms, and all available information will be furnished on application to this office. O. M. POE, Colonel Corps of Engineers, etc. Sept. 8.

**U. S. ENGINEER OFFICE, 366 MILWAUKEE ST., Milwaukee Wis., August 12, 1892.** Proposals, Harbor Improvements, Lake Michigan. Sealed proposals for: Green Bay Harbor, Wis., Dredging 120,000 cubic yards, more or less. Sheboygan Harbor, Wis., Pier Extension 200 feet, with Superstructure. Port Washington, Harbor, Wis., Pier Extension 200 feet, with Superstructure. Harbor of Refuge Milwaukee, Wis., Extending Breakwater 500 feet, and 300 feet of superstructure. Milwaukee Harbor, Wis., Cutting down and rebuilding 200 feet of Superstructure; repairing 250 feet of piers, and taking out and replacing with new 264 protection piles. Racine Harbor, Wis., Pier Extension 250 feet, and repairs. Kenosha Harbor, Wis., Pier Extension 150 feet. Waukegan Harbor, Ill., Pile Pier, 376 feet. Will be received at this office until 12 o'clock, noon, Monday, September 12, 1892, and then publicly opened. Specifications, blank forms, and all available information will be furnished on application to this office. JAMES F. GREGORY, Major of Engineers, U. S. A. Sept. 8.

W. F. COBB,  
VICE-PRESIDENT.

W. I. BABCOCK,  
MANAGER.

O. R. SINCLAIR,  
SECRETARY.

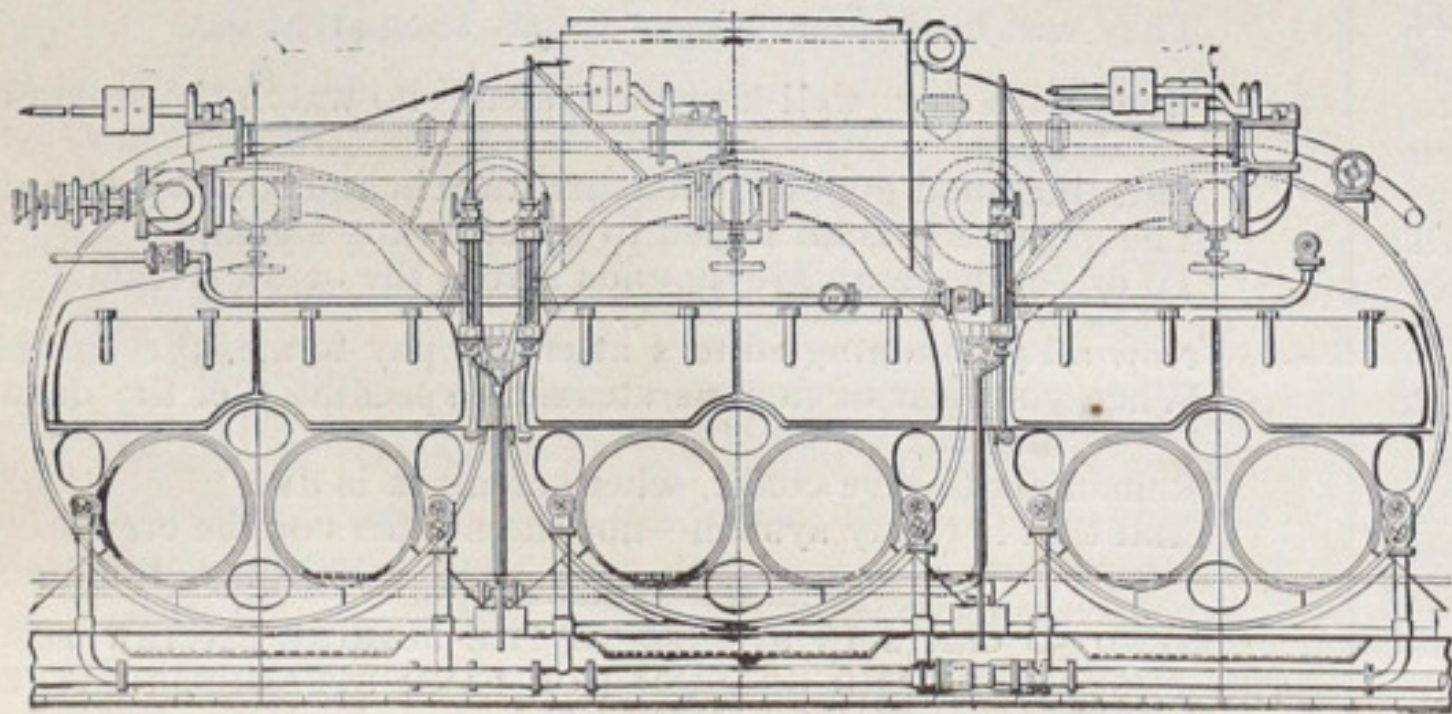
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STEEL STEAM-SHIP BUILDERS,

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(South Chicago Exchange.)

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## LAKE ERIE BOILER WORKS, BUFFALO, N. Y.



THE BEST EQUIPPED PLANT  
IN AMERICA

FOR THE MANUFACTURE OF

MODERN MARINE BOILERS.

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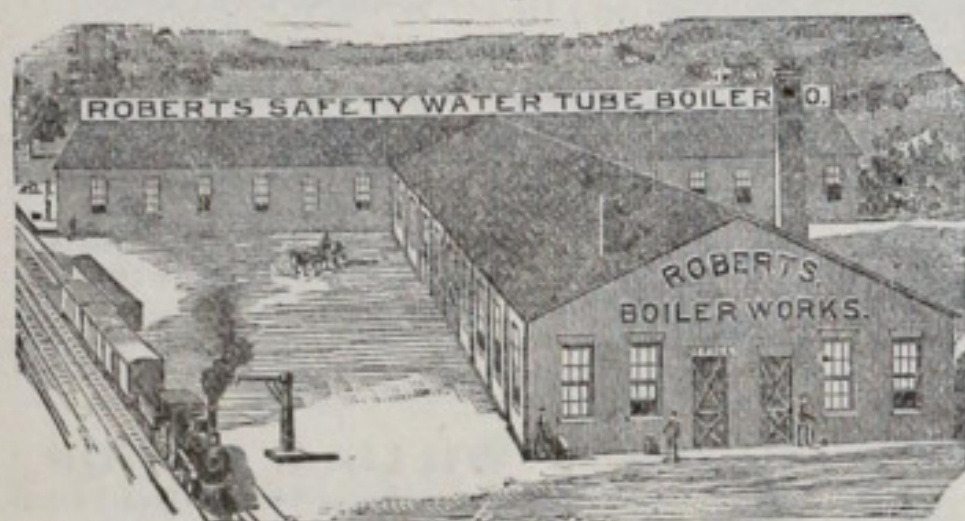
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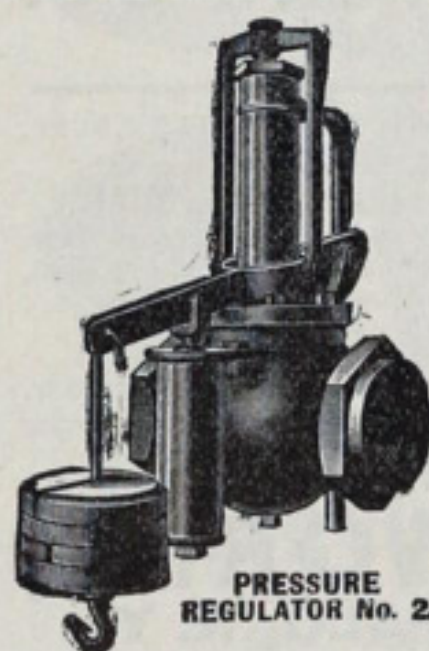
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Space under this heading may be used gratis by our advertisers or subscribers to call attention to vessels or any craft, machinery, new or second hand, that they may have for sale. Those wanting machinery of any kind, or wishing to purchase vessels, are invited to take advantage of the same offer. Employers in need of professional men or men who want positions may avail themselves of the opportunities offered. Each item will be limited to three lines. Letters concerning same must mention number attached to item and be addressed MARINE REVIEW, 516 Perry-Payne Building, Cleveland, O.

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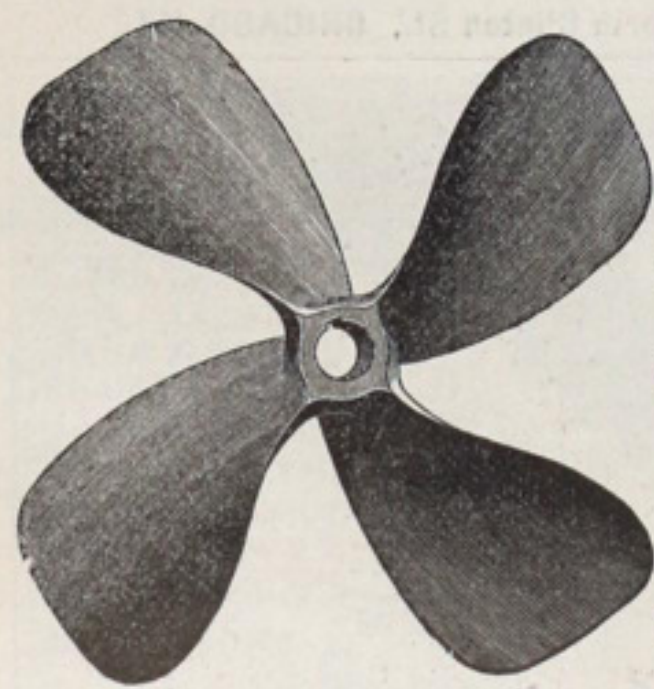
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U. S. ENGINEER OFFICE, Grand Rapids, Mich., August 15, 1892. Sealed proposals for dredging in Frankfort Harbor, Mich., will be received at this office until noon of Saturday, August 27, 1892, and then publicly opened. Specifications, blank forms and all available information will be furnished on application to this office. WILLIAM LUDLOW, Major of Engineers, Bvt. Lieut. Col., U. S. A. Aug. 25.

UNITED STATES ENGINEER OFFICE, Burlington, Vt., August 8, 1892. Sealed proposals for blasting and removing 2,000 cubic yards, more or less, of slate rock from a ledge near the State Reform School Dock in Otter Creek, Vt., will be received at this office until 10 A. M., Sept. 8, 1892, and then publicly opened. Specifications, blank forms, and all available information will be furnished on application to this office. 11-18-1.

UNITED STATES ENGINEER OFFICE, Burlington, Vt., August 8, 1892. Sealed proposals for dredging 21,000 cubic yards, more or less, of clay, sand, mud, and bowlders, from Great Chazy River, N. Y., will be received at this office, until 10 A. M., Sept. 8, 1892, and then publicly opened. Specifications, blank forms, and all available information will be furnished on application to this office. 11-18-1.

UNITED STATES ENGINEER OFFICE, Burlington, Vt., August 8, 1892. Sealed proposals for dredging 92,000 cubic yards, more or less, from the Narrows of Lake Champlain, N. Y., will be received at this office until 10 A. M., Sept. 8, 1892, and then publicly opened. Specifications, blank forms, and all available information will be furnished on application to this office. 11-18-1.

UNITED STATES ENGINEER OFFICE, Burlington, Vt., August 8, 1892. Sealed proposals for furnishing 7,000 cubic yards of rubble stone; 2,000 cubic yards of large stone, 1 to 3 tons weight, and constructing 135 linear feet of extension to breakwater at Rouse Point, N. Y., will be received at this office until 10 A. M., Sept. 9, 1892, and then publicly opened. Specifications, blank forms, and all available information will be furnished on application to this office.

UNITED STATES ENGINEER OFFICE, Burlington, Vt., August 8, 1892. Sealed proposals for blasting and dredging 72,000 cubic yards, more or less, of hard-pan and bowlders from Ogdensburg Harbor, N. Y., will be received at this office until 10 A. M., Sept. 9, 1892, and then publicly opened. Specifications, blank forms, and all available information will be furnished on application to this office.

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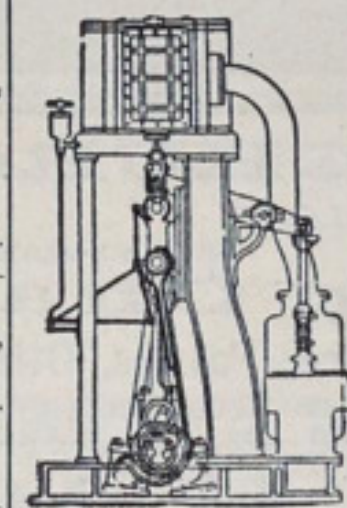
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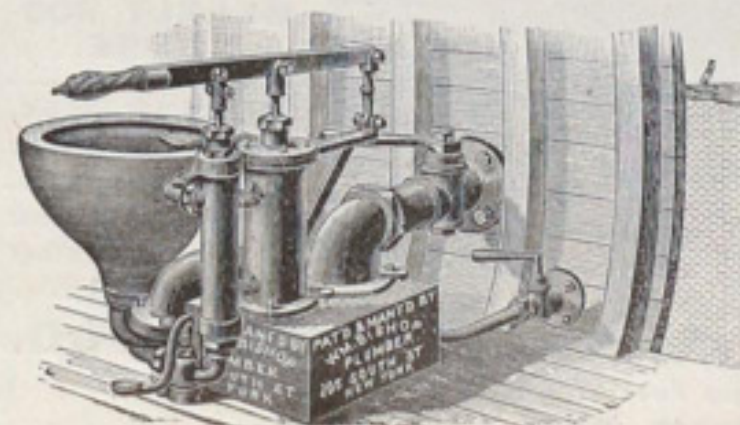
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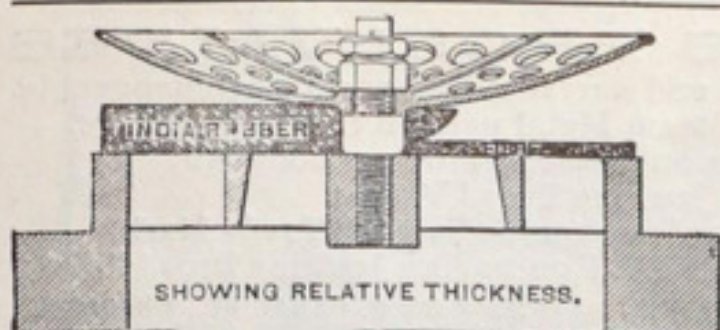
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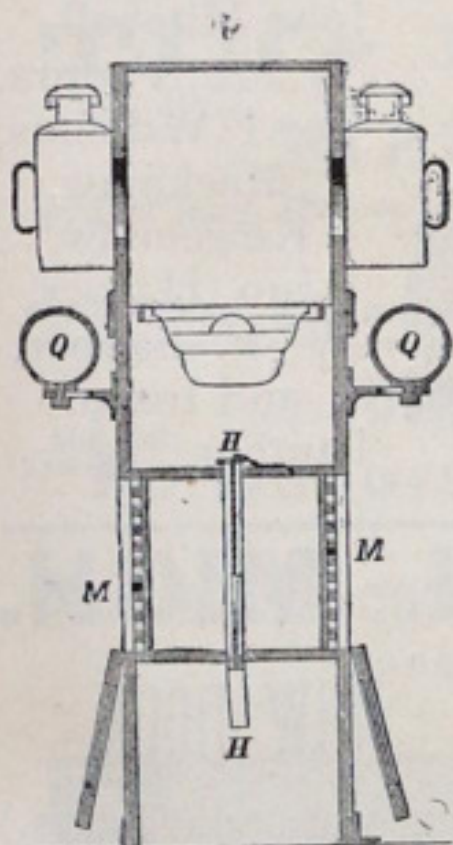
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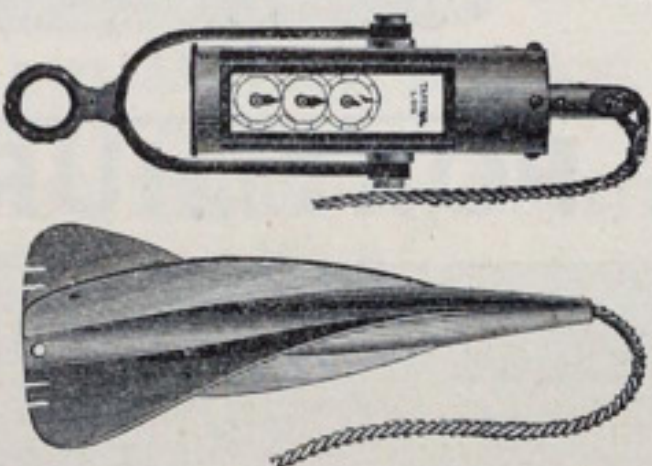
With Directions for Adjustment.

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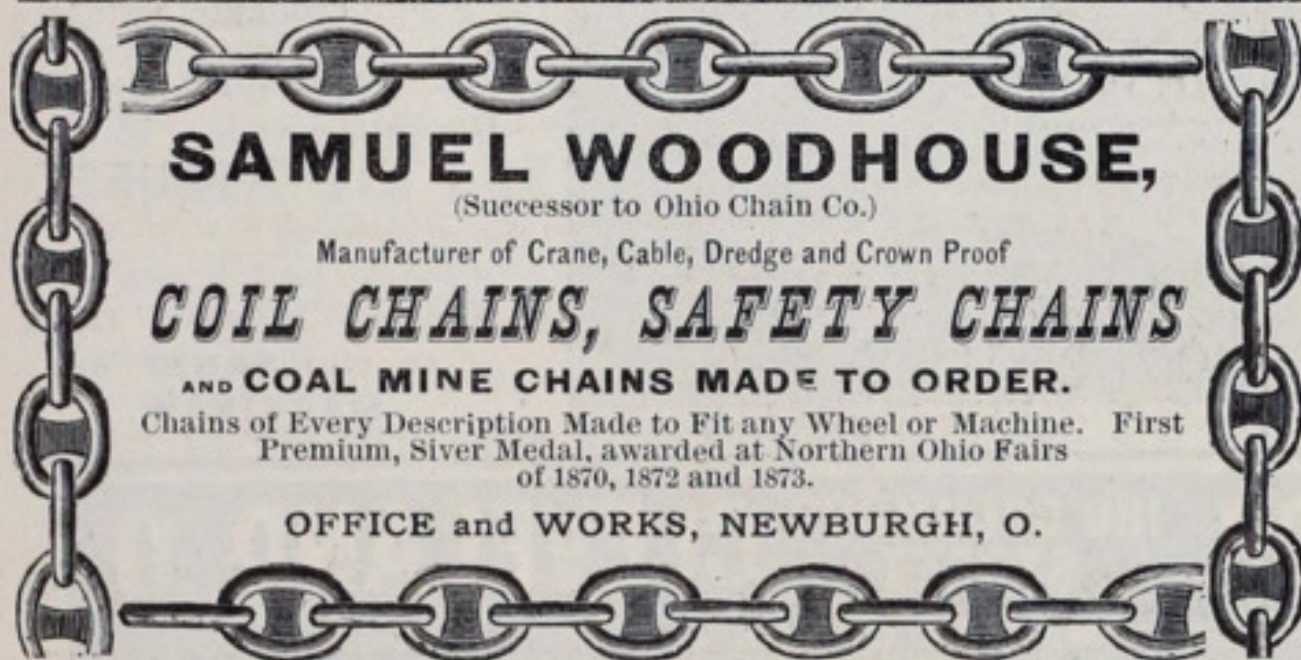
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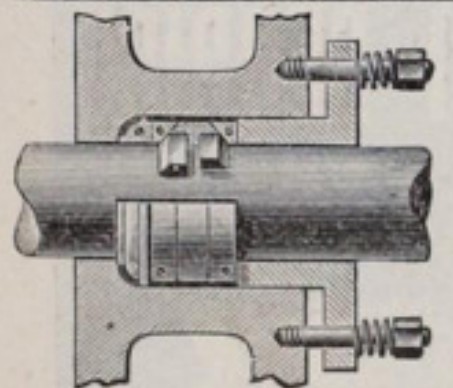
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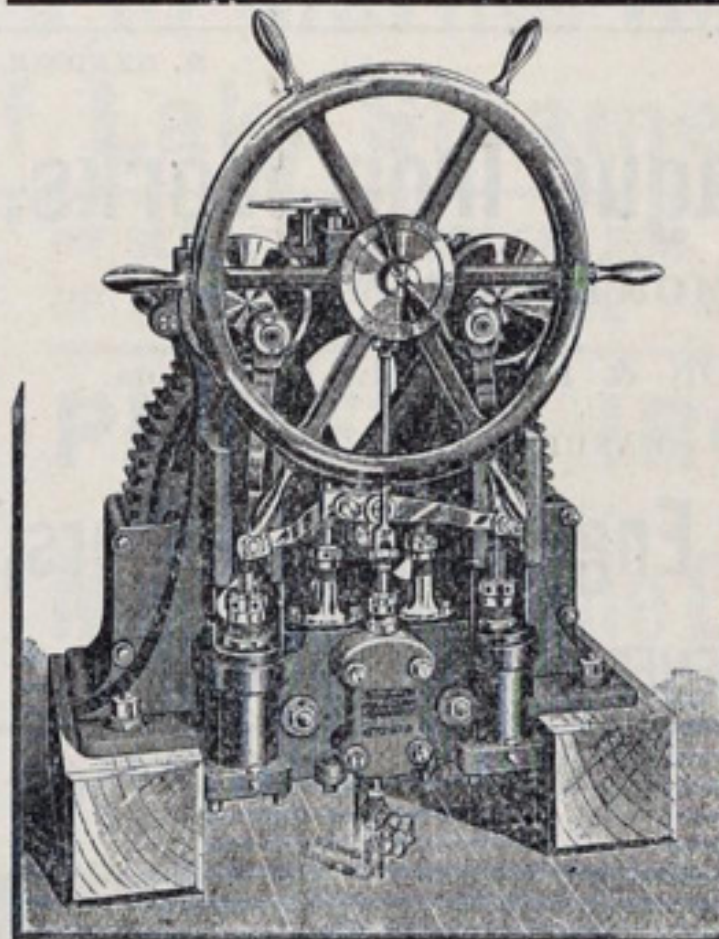
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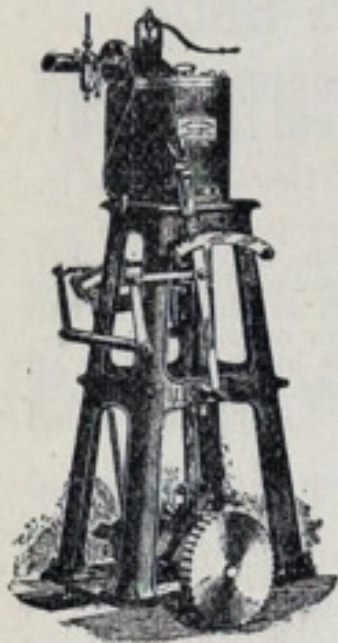
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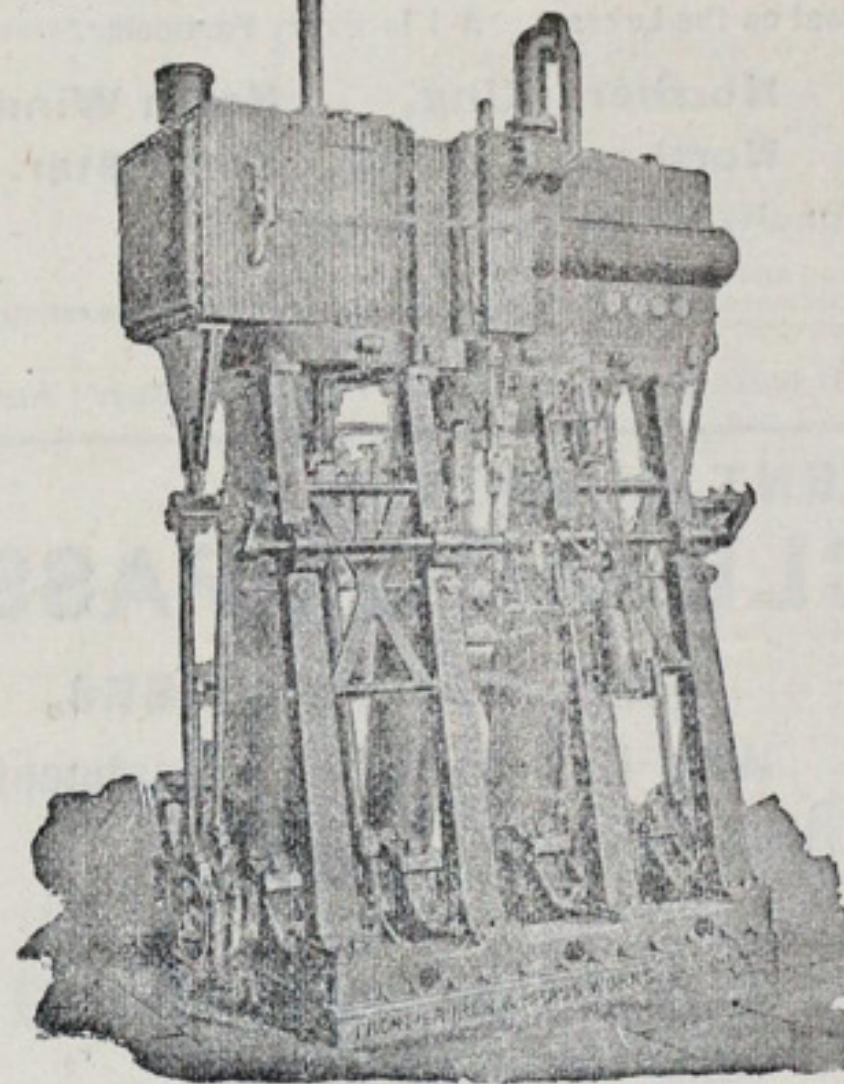
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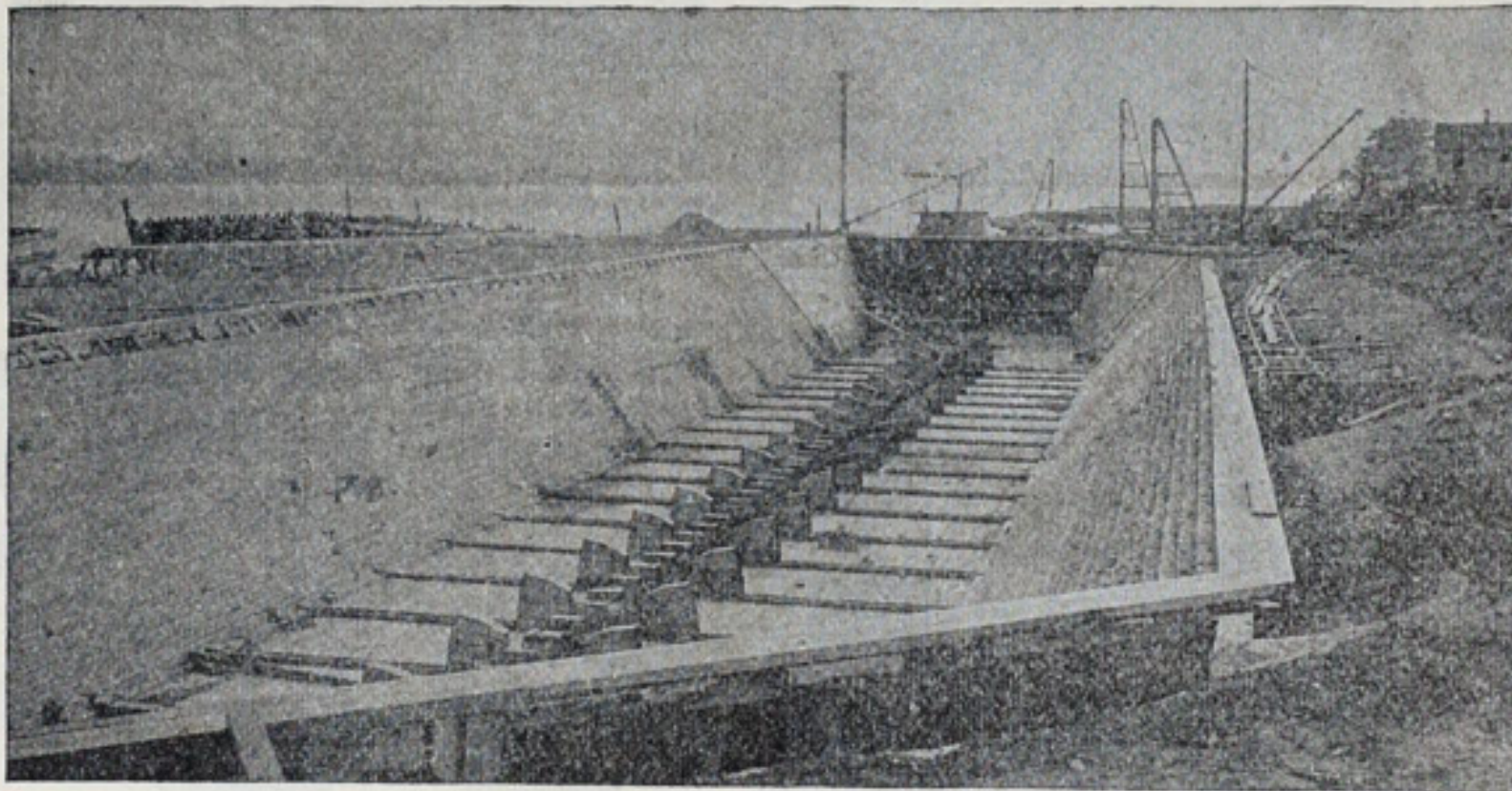
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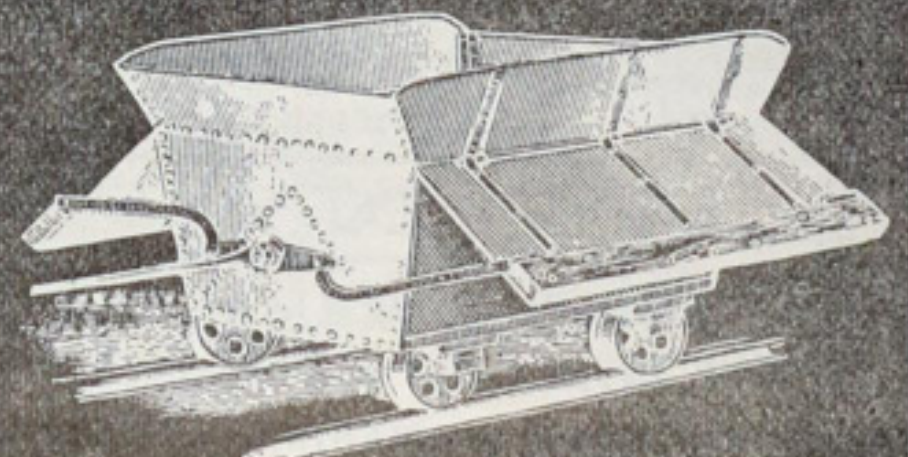
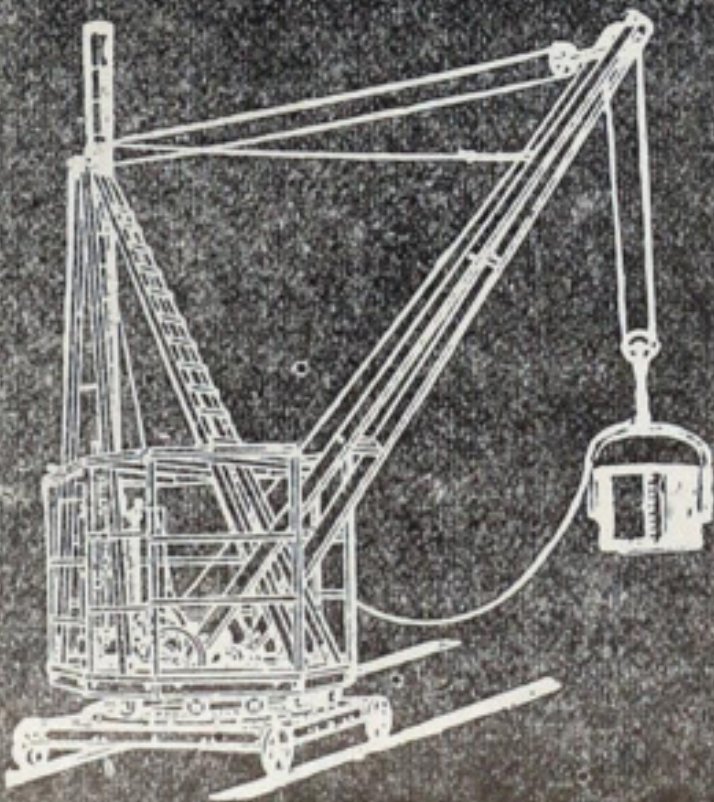
Depth: { to floor 20 feet.  
to sill 18 "  
on blocks 16 "

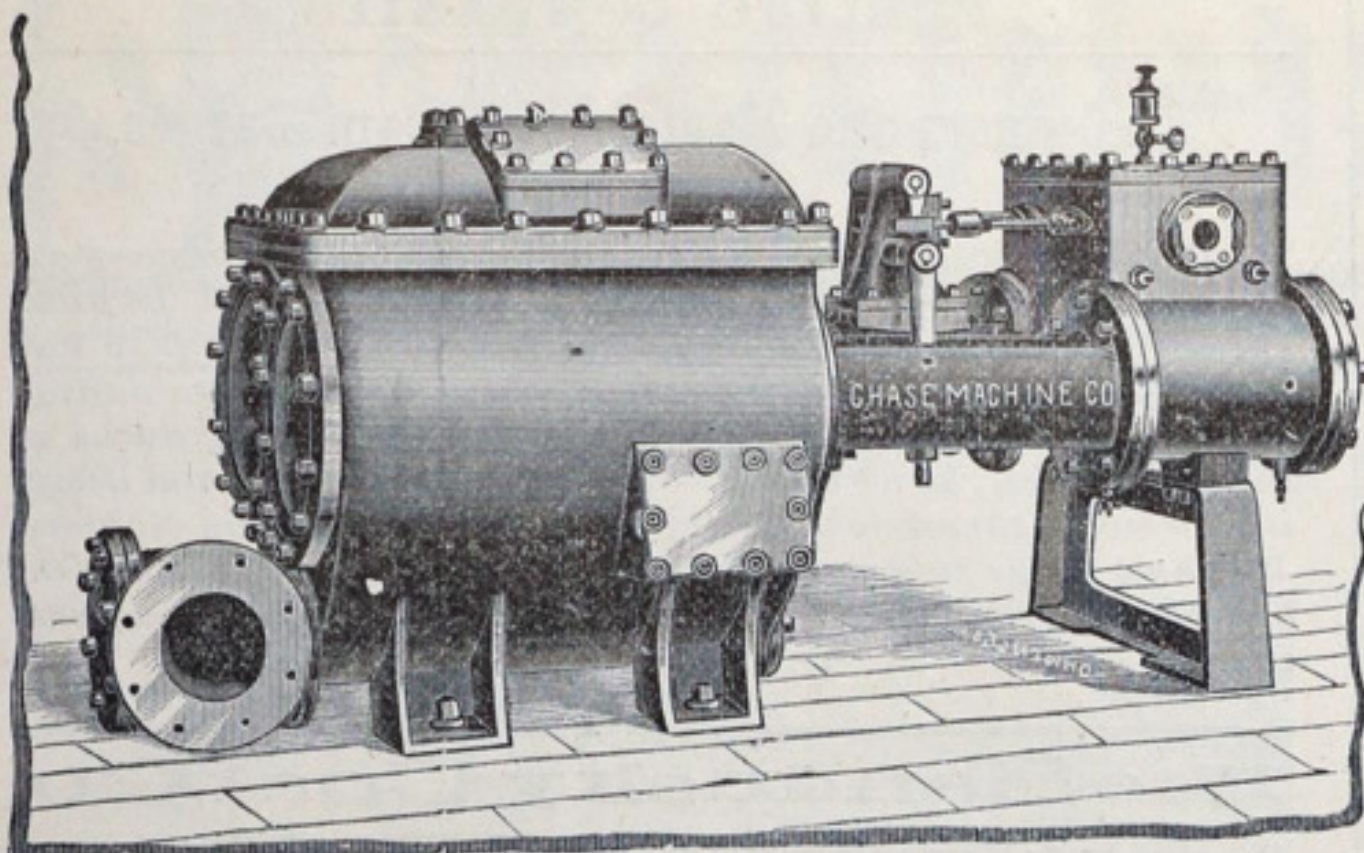
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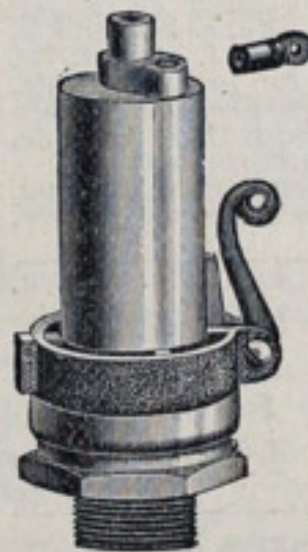


Fig. 231.  
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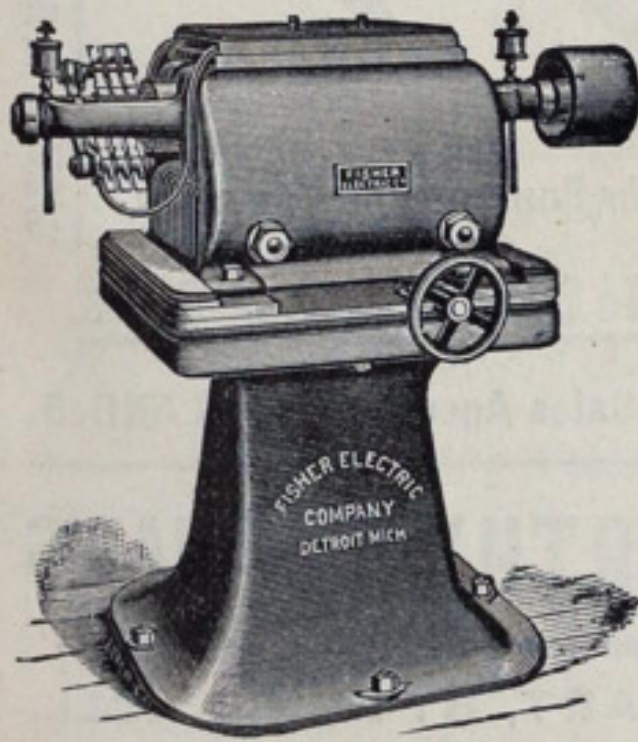
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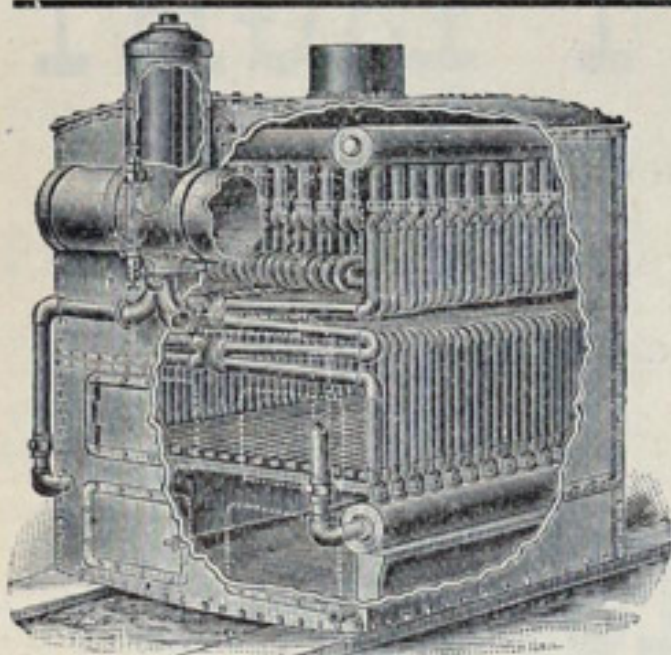
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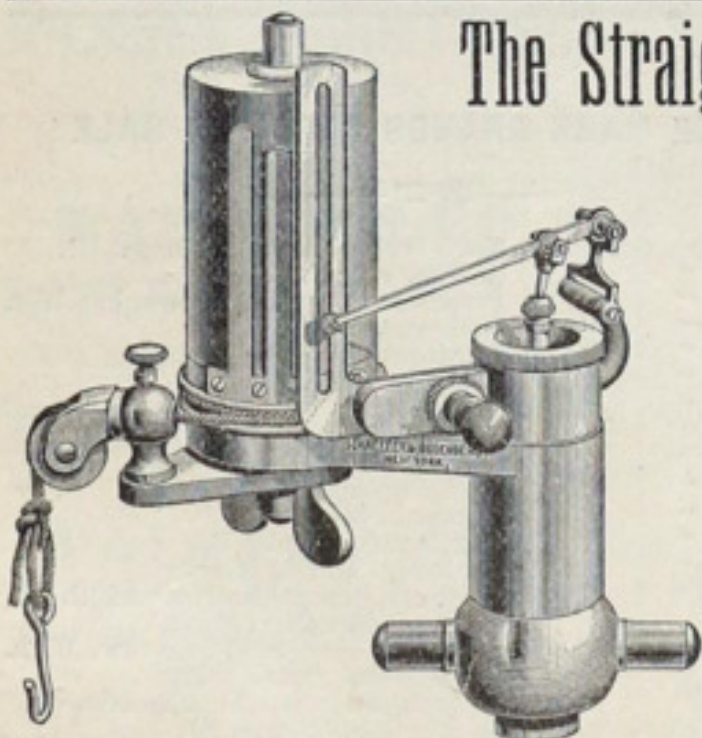
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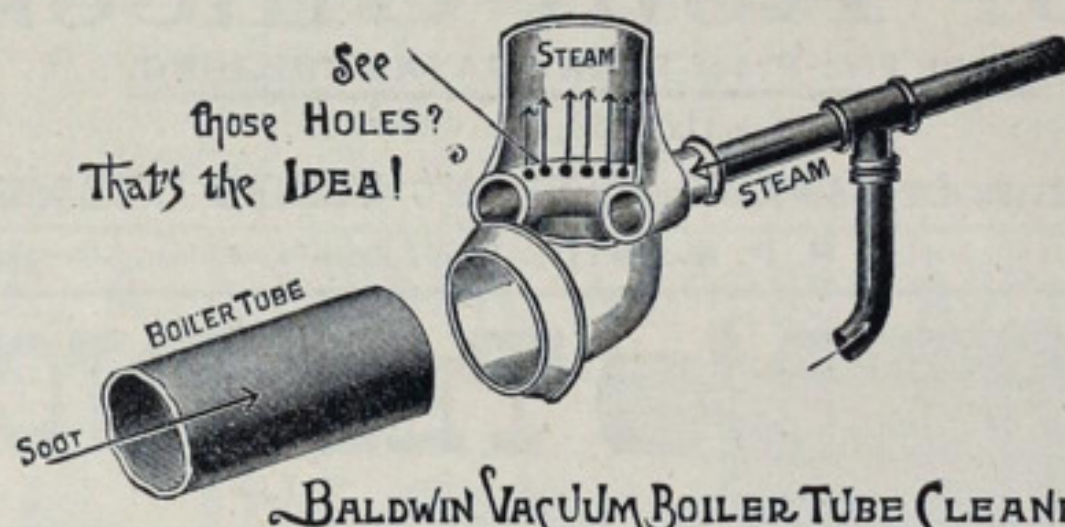
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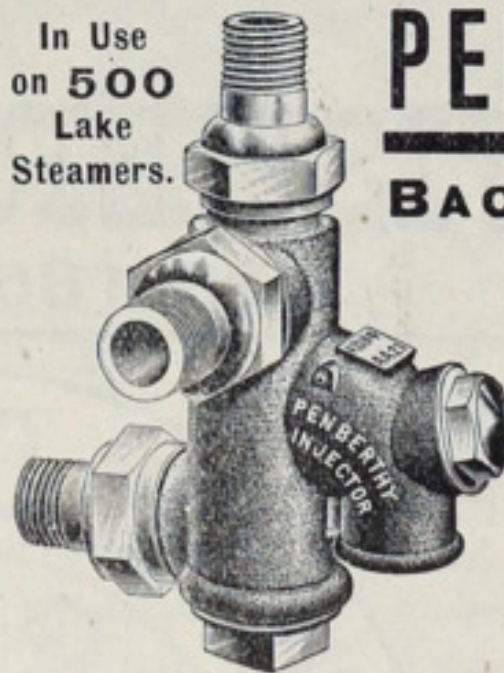
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